federal register

Friday
September 28, 1979

Part VIII

Department of Commerce

Office of the Secretary

Laboratories That Test Thermal Insulation Materials, Freshly Mixed Field Concrete, or Carpet; Proposed Accrediting Criteria; Proposed Fees

DEPARTMENT OF COMMERCE

Office of the Secretary

National Voluntary Laboratory Accreditation Program; Proposed Criteria for Accrediting Testing Laboratories That Test Thermal Insulation Materials, Freshly Mixed Field Concrete, or Carpet

AGENCY: Assistant Secretary of Commerce for Science and Technology.

ACTION: Request for comments on proposed criteria to be used by the Department of Commerce (DOC) for accrediting testing laboratories that test thermal insulation materials, freshly mixed field concrete, or carpet.

SUMMARY: Under the procedures of the National Voluntary Laboratory Accreditation Program (NVLAP) (15 CFR Part 7), this notice requests comments on the proposed general and specific criteria to be used by the Secretary of Commerce (Secretary) in accrediting testing laboratories that voluntarily request accreditation. The Secretary is offering three laboratory accreditation programs (LAPs) covering test methods for thermal insulation materials (NVLAP–01 or the insulation LAP), freshly mixed field concrete (NVLAP–02 or the concrete LAP), and carpet (NVLAP–03 or the carpet LAP). These proposed criteria to be used for all three LAPs are based on the recommendations of the National Laboratory Accreditation Criteria Committee for Thermal Insulation Material (NLACC–1 or the insulation LAP committee), the National Laboratory Accreditation Criteria Committee for Freshly Mixed Field Concrete (NLACC–2 or the concrete LAP committee), and the Department of Housing and Urban Development (HUD), which requested the carpet LAP, as well as DOC staff experience with the first round of evaluations of laboratories under the insulation LAP. These proposed criteria, as may be amended upon consideration of the public comments, will form the basis for examination of each applicant testing laboratory. The final criteria are planned for publication during January 1980.

DATES: Written comments are due on or before November 27, 1979. A request for an informal public hearing may be made before October 15, 1979.

ADDRESS: Comments should be mailed to Dr. Jordan J. Baruch, Assistant Secretary for Science and Technology, Room 3864, U.S. Department of Commerce, Washington, D.C. 20230; or delivered to Room 3864, Main Commerce Building, 14th Street between Constitution and Pennsylvania Avenues, N.W., between 8:30 a.m. and 5 p.m.

FOR FURTHER INFORMATION CONTACT: Dr. Howard I. Forman, Deputy Assistant Secretary for Product Standards, Room 3876, U.S. Department of Commerce, Washington, D.C. 20230, (202) 377–3221.

SUPPLEMENTARY INFORMATION:

Background

The National Voluntary Laboratory Accreditation Program (NVLAP) was established by notice in the **Federal Register** on February 25, 1976 (41 FR 8163–8168, 15 CFR Part 7 which has been recently redesignated 15 CFR Part 7a). This notice, amended by alternative procedures for use by Federal agencies published in the **Federal Register** on March 9, 1979, describes the procedures which are to be used for developing laboratory accreditation programs (LAPs). Three LAPs currently are being implemented as follows:.

(1) Insulation LAP. The first LAP (NVLAP–01 or the insulation LAP) is for accrediting laboratories that test thermal insulation materials. A final finding of need for this LAP was published on October 12, 1977 (42 FR 55020–55024). Subsequently, a National Laboratory Accreditation Criteria Committee (NLACC–01 or the insulation LAP committee) was formed and met on several occasions to develop and recommend general and specific criteria to the Secretary of Commerce (Secretary). These recommendations were submitted to the Secretary on August 3, 1978 and formed the basis for proposed general and specific criteria published on September 29, 1978 (43 FR 45290–45298). Comments received from the public were reviewed by the insulation LAP committee which made recommendations on how to incorporate certain of the comments into the criteria. Final general and specific criteria to be used in evaluating the capability of laboratories to test thermal insulation materials were published on January 18, 1979 (44 FR 3886–3906). DOC is now in the process of evaluating 30 laboratories which subsequently applied for accreditation. As a result of experience gained in applying the criteria in the evaluation of these laboratories and because of different recommendations being developed by a second criteria committee (described in the succeeding paragraph), the insulation LAP committee was asked to meet again to consider recommending revised criteria to the Secretary. A report entitled, "Recommendations for Revision One of the Criteria for Accrediting Laboratories Which Test Thermal Insulation Materials" was prepared and submitted to the Secretary on August 9, 1979. The report provides a basis for the development of the proposed criteria herein.

If the criteria proposed herein are adopted, they would replace the criteria issued in the **Federal Register** on January 18, 1979 for accreditation of laboratories that test thermal insulation materials. However, laboratories which have applied by February 28, 1979 for accreditation under the January 18, 1979 criteria would be governed by those criteria until a decision on accreditation has been made. Any accreditation so issued will be effective under the January 18, 1979 criteria for one year from the date the accreditation is issued.

(2) Concrete LAP. Parallel to the foregoing effort on insulation, a second LAP (NVLAP–02 or the concrete LAP) for accrediting laboratories which test freshly mixed field concrete was established with a final finding of need published on December 13, 1978 (43 FR 27224–27228). A second criteria committee, the National Laboratory Accreditation Criteria Committee for Freshly Mixed Field Concrete (NLACC–02 or the concrete LAP committee), was formed and met on four occasions to develop and recommend criteria to the Secretary. These recommendations were submitted to the Secretary on August 2, 1979 and provide a second basis for the development of these proposed criteria.

(3) Carpet LAP. Recently, the Department of Housing and Urban Development (HUD) requested that the Secretary establish a LAP to accredit laboratories that test carpet to meet the requirements set forth in the *HUD Use of Materials Bulletin (UM–44c).* This request was made on the basis that the LAP be developed using optional NVLAP procedures for use by Federal agencies (15 CFR Part 7b) published in the **Federal Register** on March 9, 1979 (44 FR 12982–12990). In accordance with these optional procedures, HUD has determined the need for such a LAP and, on August 15, 1979, forwarded recommended criteria to DOC to be used to accredit laboratories that test carpet.

Basis of Proposed Criteria

NVLAP was developed on the basis that it would provide national recognition of the capability of laboratories qualified to perform tests in product areas where such recognition is needed. DOC believes that the methodology used in according this national recognition should be identical or as consistent as possible among various product areas for which

accreditation is granted so that users of NVLAP accredited laboratories can more readily anticipate the nature and extent of the evaluation regardless of product area. Similarly, laboratories which seek NVLAP accreditation should expect to find identical or consistent criteria among the relevant product areas wherever this is possible, since many laboratories will seek accreditation in more than one product area. From an operational point of view, consistent criteria by which laboratories are to be evaluated regardless of the number of LAPs or test methods for which they seek accreditation are desirable in order to minimize the cost of the program to the laboratories and the likelihood of confusion in administering the program. Although the criteria pertain specifically to the LAPs for insulation, concrete, and carpet, these criteria are also expected, wherever possible, to be applicable to future LAPs in other product areas developed under NVLAP procedures.

There are considerable differences in a number of the recommendations of the two criteria committees, the insulation LAP committee and the concrete LAP committee. Many of these differences are in matters of form, but there are a few substantive differences. In an attempt to obtain uniformity and consistency among the LAPs, DOC has elected to propose a single set of general criteria and a single set of specific criteria to be used for these three LAPs. The DOC approach to resolving substantive differences is described below. The approach to resolving the issues of form is also described.

Before discussing these substantive issues, several points should be clarified. General criteria relate to the general characteristics of a laboratory independent of the tests performed. Specific criteria relate to the characteristics of the laboratory as related to its performance of specific tests covered in the accreditation program. The specific criteria are stated in such a manner that they do not have to be changed each time a test method is revised.

It should be understood that some sections of the specific criteria will not necessarily be applicable to all test methods. For example, in some relatively simple test methods, including many of the methods referred to as "recommended practices" or "standard methods," there is no need to calibrate equipment or to prepare a test report. In such cases, some of the specific criteria will not apply for these methods. This is why the term "as applicable" is used several places in the specific criteria. The applicability of the specific criteria to each identified test method will be clearly defined in "supplemental information" for each test method as shown in examples presented in the appendices of this notice. The examples are provided to give the public a clearer understanding as to how the specific criteria should be implemented for each test method. The appendices are part of the operating process of the program and not part of the criteria. The "supplemental information" is also part of the operating process and not part of the criteria. Each laboratory which applies for accreditation will be sent a copy of this "supplemental information" for the test methods for which it applies before any on-site visits are made or fees collected. This will enable the laboratory to ascertain precisely what is expected of it in order for it to be accredited.

Substantive Issues

The recommendations of the insulation LAP committee, the concrete LAP committee, and HUD raised a number of substantive issues and contained a number of differences among the three sets of recommendations. DOC consideration of the issues and the resolution of these differences follow. The substantive issues relating to each major section of the proposed criteria are discussed under the appropriate section heading. There are six major headings (i.e., Organizational Structure; Policy Statements; Quality Control System; Technical Staff; Equipment, Facilities, and Procedures; and Records) which correspond to the six major sections (i.e., G1, G2, G3, S1, S2, and S3) of the proposed criteria.

(1) *Organizational Structure (G1).* Every laboratory accreditation program needs some general information about each applicant laboratory's organization. Both NVLAP criteria committees and HUD in their recommendations agreed that information such as the name and address, ownership and management structure, organizational chart, reporting relationships, and the position description of the person who has technical responsibility for the laboratory should be provided. The original criteria (for laboratories that test thermal insulation materials as published in the **Federal Register** on January 18, 1979; 44 FR 3886–3906) contained these provisions. The original criteria also required a laboratory to provide a general description of the laboratory including its equipment and facilities, a list of technical services performed, estimates of the number of times each test is run, and the names and résumés or personnel requirements of all positions identified on its organizational chart.

The concrete LAP committee in its deliberations stressed that the criteria should require only information which is absolutely essential for accreditation in order to minimize the paperwork involved. It recommended the deletion of the suggested provisions for a general description, the list of services, the estimates of the number of times tests are run, and the names and résumés or personnel requirements of all positions on the organization chart.

The insulation LAP committee reviewed these recommendations and endorsed all of them except the deletion of a general description of the laboratory. It believed that this information would be useful in identifying the laboratory, administering the LAP, and scheduling on-site examinations. Also, it believed that the provisions for a listing of technical services performed and estimates of the number of times tests are run would be useful for the same reasons. However, the insulation LAP committee agreed that these two provisions might be requested in the application form rather than be included as part of the criteria. Under this approach information obtained from these two provisions would not be used as a basis for making the accreditation decisions since they would not be part of the criteria. DOC was convinced that the position of the insulation LAP committee and HUD should be accepted. For the carpet LAP, HUD agreed with the insulation LAP committee's position.

Relative to the "general description" issue, DOC proposes to clarify the intent of this section (G1.1.6) by deleting the words "its equipment" and revising the language to read, "A general description of the laboratory, including its facilities and scope of operation."

Editorial changes to the original criteria are made herein to G1.1 and its subsections in accordance with the recommendations from the concrete LAP committee and HUD.

The concrete LAP committee recommended the deletion of criterion G4 of the original criteria. This criterion requires reporting to the National Bureau of Standards (NBS) of substantive changes in the laboratory regarding the general and specific criteria. The concrete LAP committee suggested that the only changes that need to be reported to NBS are fundamental changes related to the provisions of G1.1 (e.g., change of name, address, ownership, management, general description, or scope of

operation). It concluded that it is unreasonable to expect laboratories to report changes in equipment, technical staff, and the like which is implied in the original criteria because these changes are so frequent that the cost of paperwork involved would not be offset by any expected benefits. Therefore, it recommended a new G1.2 requiring the laboratory to submit a statement of any fundamental changes related to the provisions of G1.1 within 30 days of such changes. The insulation LAP committee and HUD agreed with the addition of this new G1.2 and the deletion of G4 of the original criteria and DOC also agrees.

(2) *Policy Statements (G2).* The NVLAP procedures (15 CFR Part 7a.7 and Part 7b.7) specifically suggest that criteria committees consider "professional and ethical business practices" pertaining to testing laboratories in recommending the general criteria. Both committees and HUD have such provisions in their recommendations.

In the original criteria the provisions addressing "professional and ethical business practices" required a laboratory to have a policy statement and documented evidence that it is operated in accordance with generally accepted professional and ethical business practices. The concrete LAP committee, in stressing the need for reducing paperwork and clarifying how a laboratory would be judged, recommended that the "ethical practices" provisions be restated as a series of policy statements and simply request the laboratory's written agreement to be governed by such statements. Compliance would be assessed at such time that a complaint or other evidence, which is received by DOC, impugns the accredited laboratory's compliance with any of the policy statements. The insulation LAP committee and HUD agree with this recommendation as does DOC.

In addition, the concrete LAP committee recommended two provisions not addressed by the original criteria and one provision addressed under criterion G4 of the original criteria. The first two provisions are that the laboratory shall agree in writing to—(a) perform the tests for which accreditation is sought in accordance with the test methods, and to report any deviations from those test methods in its test reports; and (b) return its certificate of accreditation should it become unable to conform to any of the criteria for accreditation. The concrete LAP committee indicated that it was important to encourage the laboratory to conform strictly to each test method, and that if the laboratory deviates from the test methods it should be required to report that fact to its client(s). Similarly with respect to the second provision, the concrete LAP committee indicated that an accredited laboratory has a duty, as a matter of ethical practice, to return its certificate of accreditation if it becomes unable to conform to the NVLAP criteria and chooses to remain in non-conformance. The insulation LAP committee and HUD agreed with these two recommendations as does DOC.

The third provision recommended by the concrete LAP committee with which both the insulation LAP committee and HUD agreed, is that an accredited laboratory be required to conduct each test method in accordance with the latest version of the method within one year after publication. The original criteria required reporting and implementation of all changes necessitated by a revision in the test method within 45 days unless another time limit is established by NBS. The concrete LAP committee rejected this criterion because it believed that—(a) the 45-day deadline is too short; (b) copies of published test methods are not always readily available; (c) the ASTM book of standards covering concrete test methods published once a year will not include the revisions made during the year the book is in effect; and (d) the reporting and documenting of every change necessitated by revisions to the test methods is unnecessary paperwork. The insulation LAP committee and HUD agreed with the provision recommended by the concrete LAP committee. DOC agrees that this will be adequate for most situations but believes that in some unusual situations an earlier or later time limit may be appropriate. Hence, the proposed provision (G2.1.6) provides that another time limit may be specified by DOC. If such a situation occurs, the accredited laboratories will be directly notified and the new time limit will be published in the **Federal Register.**

The original criteria require that test data, records, and reports be treated as proprietary information which cannot be released to other individuals without a written agreement from the laboratory's client(s). The concrete LAP committee recommended deletion of this provision on the grounds that test results on concrete should be made readily available to all interested parties and that in some jurisdictions the results may be statutorily required to be in the public domain. The insulation LAP committee disagreed with this recommended deletion because it believed that keeping a client's information in confidence is particularly important in areas such as thermal insulation where technology is very close to the state-of-the-art. HUD agreed with the insulation LAP committee as does DOC. DOC believes that clients normally expect laboratories to treat their data as proprietary. Also, such a provision is stated in two sections of the International Standards Organization document, ISO Guide 25–1978(E), "Guidelines for Assessing the Technical Competence of Testing Laboratories." DOC proposes that this provision (G2.1.4) read, "Treat test data, records, and reports as proprietary information unless the client agrees in writing to the release of such information." However, it should be noted that section 7a.7 and 7b.7 of the NVLAP procedures do not relieve laboratories from compliance with any existing Federal, State, or local statutes, ordinances, and regulations that may pertain to this subject.

(3) *Quality Control System (G3).* Laboratory accreditation should relate to the quality of performance of the laboratory being accredited. The NVLAP procedures (15 CFR Part 7a and Part 7b.7) specifically indicate that criteria committees, in recommending the general criteria, should address factors such as "operational processes," "control procedures," and "quality assurance" pertaining to testing laboratories. Both criteria committees and HUD in their recommendations agreed to the overall concept that a laboratory must maintain some sort of quality control system related to laboratory performance in order to be accredited and DOC concurs.

The original criteria contain a requirement that to be accredited a laboratory must have a quality control system. Under those criteria, the system is to be documented in a quality control manual which either would contain information required by certain sections of the criteria or would show the location in the laboratory of information required by other sections of the criteria. The laboratory is required to describe, generally, its system for auditing and monitoring its test work, assuring calibration of equipment, assuring maintenance of equipment and facilities, controlling the flow of work, and maintaining records. In addition, for each test method the laboratory is required to describe its equipment, facilities, equipment calibration, and verification procedures. During the implementation of the insulation LAP, as laboratories attempted to prepare their manuals, a number of questions were raised relative to the apparent overlap

in data requirements of the general and specific criteria. In the manuals that were received, the procedures used to assure that accurate data were obtained using specific test methods were not always clear.

The concrete LAP committee in its deliberations stressed three important considerations: (a) Precisely what does a laboratory have to do to be accredited for each specific test method; (b) How will judgments be made of the acceptability of each laboratory's response to each criterion; and (c) Can the criteria be simplified? Although the concrete LAP committee agreed on the need for some kind of quality control system, it recommended that the criteria be simplified so that all the detailed requirements for equipment description, calibration, test plans, and record keeping could be placed in the specific criteria and be combined with the elements of the original specific criteria. Rather than a quality control manual, it called for an operations control manual which would provide for both employees and NVLAP examiners, a step-by-step description of how the laboratory operates in the performance of each test.

The insulation LAP committee reviewed these suggestions and recommended against accepting them. Instead, the insulation LAP committee recommended a laboratory quality control manual that describes how the laboratory assures the quality of its test results (e.g., how it calibrates its equipment or how it prepares its reports, including information specific to individual test methods as needed). That committee also suggested that the quality control manual concept should be retained at least until the first round of accreditation was completed and an analysis could be made of the advantages and disadvantages of providing such a manual.

For the carpet LAP, HUD agreed with the desirability of a quality control system, and stated that such a system was compatible with its existing program and that HUD was flexible about the exact provisions of the criteria. HUD agreed with and recommended the position which is taken by DOC on this issue.

In an attempt to provide uniform criteria, DOC makes the following proposal:

(a) A quality control system must be in existence and must include either a quality control manual or a laboratory operations control manual.

(b) The manual does not have to be routinely submitted to NVLAP but must be available for review by NVLAP on-site examiners.

(c) The manual must contain information in response to the applicable requirements of the specific criteria or indicate where in the laboratory such information is located for each test method or group of test methods. (A quality control manual developed to meet the requirements of the original criteria, if deemed adequate by NBS to meet those original requirements, and if up-to-date, will suffice to meet this requirement.)

(d) The determination as to whether the manual is adequate will be based upon judgment by an evaluator that a qualified testing technician can use the information to conduct the test properly. To resolve any doubts about the adequacy of the manual, NBS may ask that copies of portions of the manual be sent to NBS for further evaluation. One of the main uses of a quality control manual or operations control manual is to enable a qualified technician to go to one reference source in the laboratory for guidance in adequately performing the specific tests for which the laboratory is accredited.

(e) Other detailed requirements specified in the original general criteria are proposed to be shifted to the specific criteria. Emphasis is placed on laboratory procedures which help assure that each test for which accreditation is granted will be conducted properly.

DOC is persuaded by the arguments and recommendations of the concrete LAP committee that the requirements of the original criteria were often not clear. Although sympathetic to the insulation LAP committee's plea not to change the criteria too hastily before performance in response to the original criteria could be thoroughly assessed, DOC favors the changes contained in this proposal because it is convinced that they do not set out new requirements but rather reorder the original requirements and redirect emphasis. Program implementation time schedules are such that the decision must be made now rather than later, so that the accreditation of laboratories in these three product areas can proceed at the desired orderly rate during the next calendar year.

(4) *Technical Staff (S1).* One element of accurate testing performance is the competence of the technical staff of the laboratory. The original criteria require that the laboratory be staffed with trained and experienced personnel and that a list of, or requirements of, the responsible technical personnel be available. The concrete LAP committee reviewed this requirement and suggested that a more definitive requirement was needed to evaluate the competence of the technical staff. A qualifying program, including an examination of personnel, was deemed appropriate by that committee because of the importance of personnel competence to good testing. Instead of requiring NVLAP to certify each staff member (a complex administrative process), and instead of requiring such certification from some other certifying agency, the concrete LAP committee suggested that management of the laboratory be required to evaluate each staff member periodically, using a test method performance check sheet provided by NVLAP in a closed-book examination of the technician (i.e., technician(s) must know the test method from memory) or by observation of each technician's performance.

The insulation LAP committee reviewed this suggestion and rejected it on two bases: (a) many of the insulation tests are very complicated so that a technician should not perform these tests without reference to the text of the test method; and (b) for the larger laboratories with many technicians performing many different tests, this would result in a severe administrative burden. Further, the insulation LAP committee argued that the technicians testing thermal insulation were under relatively constant supervision so that such an administrative burden was not warranted.

DOC is persuaded that some more formal recognition of a technician's ability should be included in the criteria. Hence, the proposed criteria require laboratory management each year to make a formal determination qualifying each technician who performs the tests and to record this determination in each individual's personnel file. DOC is not convinced that closed-book examinations are appropriate, except in special cases described below. Many of the tests for which accreditation will be sought are very complex and the technician should be encouraged to follow written instructions precisely under close supervision of laboratory management. There is, however, the following special case where the formal examination of each technician appears to be appropriate. When a technician leaves the environment of the laboratory and performs simple tests at a field site (as occurs frequently in concrete testing), or when supervision is not present, the technician should be expected to know the test methods from memory. In those cases, a closed-book examination is appropriate.

With this reasoning in mind, the following criterion is proposed: "S1.1 The laboratory shall assure the

competency of its staff through observation and/or examination of each relevant staff member * * *" For those test methods normally conducted in the field an examination will be required and an examination form will be supplied by NVLAP. Each test method judged by DOC to be normally conducted in the field will be identified in the "supplemental information" for that test method. This examination form will also be used by NVLAP on-site examiners during their visits to the laboratory to spot check the performance of technicians. Evaluation of personnel for all other test methods not requiring an examination will be based upon observation by on-site examiners.

It is also proposed that in lieu of the observation or examination requirement, a laboratory may have a current certificate or license from a suitable outside certifying agency which asserts that its technicians can perform the test methods for which the laboratory seeks accreditation. This provision is proposed to allow laboratories the option of outside certification where it is available or required by other test monitoring jurisdictions.

The concrete LAP committee also recommended that the personnel files of the technicians record the date of observation and designation of competency of each technician, including dates and results of any examination, records of any outside certification, and a listing of training courses completed. This would enable the on-site examiner to verify that each qualified technician is trained and deemed qualified. The original criteria have a provision related to personnel records but they are not as detailed as the concrete LAP committee recommendation.

HUD generally endorsed the recommendation of the concrete LAP committee on the revised provisions proposed for criterion S1. DOC also supports the recommendation of the concrete LAP committee on this issue.

(5) *Equipment, Facilities, and Procedures (S2).* The detailed requirements identified under criterion G2 of the original criteria relative to the quality control system, have been, for the most part, merged into the specific criteria in this proposal. In its review of the original criteria, the concrete LAP committee attempted to condense and simplify the requirements. The insulation LAP committee preferred not to change these detailed provisions until a thorough analysis of the criteria could be made based on completion of the first round of laboratory evaluations. However, because of the time required to develop final criteria and because of the desire to promulgate the availability of the three LAPs simultaneously, DOC proposes to adopt most of the recommendations of the concrete LAP committee.

In considering this criterion, it must be recognized that many of the requirements are not applicable to some of the simple test methods. For example, the American Society for Testing and Materials Standard Method for Making and Curing Concrete Test Specimens in the Field (ASTM C31) has no requirement for a test report. The "supplemental information" will clearly specify how the requirements apply to each test method.

The simplifications proposed are as follows:

(a) Combine S2 and S3 of the original criteria into one statement, "S2. The laboratory's facilities, equipment, and procedures are appropriate for accreditation."

(b) Condense S2.1, S2.2, and S2.3 of the original criteria into S2.1a, b, and c dealing with the listing and describing of equipment and facilities.

(c) Condense S3.1, S3.2, S3.3, and S3.4 of the original Criteria into S2.2.1a, b, c, and d dealing with the calibration, verification, and maintenance of test equipment and facilities.

(d) Transfer G2.2.2 of the original criteria to S2.2.2 dealing with calibration and verification records.

(e) Convert S4, S4.1, and S4.2 of the original criteria dealing with in-house operating protocols into S2.3a, b, c, d, and e which address the same issues, in what is called a test plan.

(f) Combine S2.4, S4.3, and S4.4 of the original criteria into one statement, "S2.4. The laboratory shall maintain, as applicable, documented evidence that no degradation of performance results from the use of equipment, facilities, or procedures which are not in strict conformance with each test method . . ."

In criterion S2.3 there is a provision related to subcontractors followed by a note of explanation. The original intent of this provision was to allow unaccredited subcontractors to perform common repetitive tasks (such as making slides or taking pictures) which are required by certain test methods, but to accredit a laboratory only if it develops final test data for a test method. The criteria committees and DOC agree with this provision.

In its criteria recommendations HUD strongly objected to the inclusion of any provision allowing part or all of the testing to be performed by a subcontractor on the theory that to do so would defeat the purpose of NVLAP. DOC is not persuaded by HUD's position as it would pertain to subcontractors performing common repetitive parts of a test method. However, in using subcontractors in this way, DOC proposes that the accredited laboratory would have to show how the use of that subcontractor provides no degradation in test results.

During meetings of the insulation LAP committee a related question was raised as to what would happen if a laboratory experienced a temporary breakdown in a piece of equipment which produced final test values. The committee recommended that an accredited laboratory be allowed to obtain final test data from an unaccredited laboratory on a temporary basis, provided it informed its clients that it was using an unaccredited laboratory. There has been considerable discussion among the members of the criteria committees and HUD about this issue. HUD in particular has recommended against allowing accredited laboratories to use unaccredited laboratories on a temporary basis. A number of key questions have been raised. If a laboratory cannot complete a test for which it is accredited, must it decline to provide test data until its test capacity is restored or should it be allowed to provide data from an unaccredited laboratory on a temporary basis with notice to the client? In considering this question, note that the laboratory could not be accredited for a test method in the first place unless it performs the test properly, so it is not a question of whether the laboratory ever possessed the capability, but only what happens in a "temporary" emergency. Also note that it is presumed that an accredited laboratory may always subcontract with another accredited laboratory without additional evidence or verification. Another question is: How does one define "temporary"? This relates to an even broader question: Can NVLAP be expected to control day-to-day operational problems of laboratories or is it limited to recognizing only the capability of a laboratory? Comments from the public on this issue are of particular importance in establishing the final criteria.

DOC is persuaded at this writing that an accredited laboratory should not be allowed to present final test data to a client as data from an accredited laboratory unless the final test data were obtained from an accredited laboratory.

The concrete LAP committee objected to the provisions of the original criteria which allowed non-critical modifications to procedures, test

equipment or facilities, or modifications due to unusual environmental conditions (e.g., deviation from strict conformance to the test methods). It is that committee's position that laboratories should always be in strict conformance with the standard test methods. The insulation LAP committee believed that such deviations are needed under certain circumstances for some of the test methods covered by their LAP and, thus, this provision is needed. DOC believes that both positions can be accommodated with the use of the phrase, "as applicable," in S2.4. The "supplemental information" will clearly indicate when deviation from strict conformance may be allowed for each test method. In the case of the concrete test methods, because of the nature of those methods, no deviations will be allowed.

(6) *Records (S3).* One prerequisite for good management of a laboratory is adequate record keeping. With this in mind, the concrete LAP committee recommended a separate criterion dealing with the maintenance of records. Using many of the record keeping provisions (see G2.5) of the original criteria HUD generally endorsed this recommendation as does DOC. A comparison between the original criteria and the proposed criteria follows:

(a) S4.5 and G2.5.1 of the original criteria correspond to S3.1.1 dealing with the contents of a test report. (An applicant laboratory shall submit for NVLAP review a completed test report with the name of the client and the source of the product deleted.)

(b) G2.5.2 of the original criteria corresponds to S3.1.2 dealing with data generated during testing.

(c) G2.5.3 of the original criteria corresponds to S3.1.3 dealing with specimen control. (The requirement was expanded by the concrete LAP committee to require either forms or a written description of the procedures and separate records that are maintained to provide specimen control.)

(d) S2.4 and G2.5.4 of the original criteria correspond to S3.2 dealing with copies of applicable standards and other documents referred to or used in performing each test method.

(e) G2.1 of the original criteria corresponds to S3.3 dealing with quality control checks and audits including records of audit sampling and detected errors and discrepancies (DOC expanded the concrete LAP committee's recommendation on this section by including the language of the original criteria dealing with audit sampling because it is believed that good quality assurance of a laboratory includes audit sampling and records maintenance).

(f) G2.5.6 of the original criteria corresponds to S3.4 dealing with maintaining a file of written complaints and disposition thereof.

Note that in several provisions of the criteria, and in particular in this criterion, there is a requirement to maintain records and no specific period of time is given for retaining these records. Since it is not the intent of the criteria to require maintenance of records indefinitely, comments on whether there should be an explicit minimum period for retaining records and how long any such period should be are particularly requested. What basis should be used for determining a reasonable time period? Should any such time period be specified in the criteria or "supplemental information"? The recommendations of each committee and HUD do not address these questions. However, the concrete LAP committee believed that state law or other legal requirements take care of the issue, and thus, a time period need not be specified.

Request for Comments

Interested persons desiring to comment on the proposed criteria are invited to submit written comments, in four copies, on or before November 27, 1979, to the Assistant Secretary for Science and Technology, Room 3864, U.S. Department of Commerce, Washington, D.C. 20230.

Any person desiring to express his or her views in an informal hearing relative to the proposed criteria may do so by a written request for a hearing addressed to the Assistant Secretary for Science and Technology on or before (please insert the date which is 15 days from the date this notice is published). Upon receipt of such a request, informal public hearings will be held to give all interested persons an opportunity to orally present data, views, or arguments, in addition to the opportunity to make written submissions. If deemed appropriate, hearings may be held at two locations, one of which will be east of the Mississippi River and the other west thereof. Notice of the hearings will be published in the **Federal Register** at least 20 days in advance thereof. A transcript will be made of any oral presentations.

Comments are invited on any aspect of the proposed general and specific criteria and the additional provisions pertinent to each LAP. DOC is not requesting comments on the provisions of the NVLAP procedures (i.e., the basic conditions for accreditation). The notes and appendices are provided to give the public a clearer understanding of how the criteria will be implemented. Although the notes and appendices are considered part of the operating process of NVLAP and not part of the criteria, comments on the notes and appendices are welcome.

Detailed section-by-section comparisons of the proposed criteria with the original criteria and with each set of recommendations from the insulation LAP committee, concrete LAP committee, and HUD are available for inspection and copying in the DoC's Central Reference and Records Inspection Facility, Room 5317, Main Commerce Building, 14th Street between E Street and Constitution Avenue, NW, Washington, D.C. 20230.

All written and oral comments and testimony that are furnished in response to this invitation will be made part of the public record and will also be available for inspection and copying in the DoC's Central Reference and Records Inspection Facility.

Procedure Following Receipt of Comments

Upon receipt of all written and oral comments, the insulation LAP committee, the concrete LAP committee, and HUD will each be requested to conduct an evaluation and make recommendations to the Assistant Secretary for Science and Technology with respect to such public comments. After considering the three sets of recommendations, the Assistant Secretary will prepare his evaluation and publish a notice in the **Federal Register:**

(1) Announcing the final general and specific criteria that laboratories testing insulation, concrete, or carpet must meet in order to be accredited and the date when such final criteria will go into effect, which will not be less than thirty (30) days after the date of publication of the notice; or

(2) Stating that the proposed general and specific criteria will be further developed before final publication; or

(3) Withdrawing the proposed general and specific criteria from further consideration.

Dated: September 25, 1979.

Jordan J. Baruch,

Assistant Secretary for Science and Technology.

Proposed Criteria

The proposed general and specific criteria to be used to accredit laboratories that test thermal insulation materials, freshly mixed field concrete, and/or carpet under the National Voluntary Laboratory Accreditation

Program (NVLAP) of the U.S. Department of Commerce (DOC) are set forth below. These criteria have been developed in compliance with the NVLAP procedures (15 CFR Part 7a and Part 7b) and form the basis for accrediting testing laboratories that voluntarily request this accreditation. These criteria are believed to be appropriate for use in accrediting laboratories which test many other kinds of products should NVLAP be requested in the future to provide such accredition.

Requesting Accreditation

Application forms for testing laboratories requesting NVLAP accreditation under any of the three LAPs (insulation LAP, concrete LAP, and carpet LAP) will be published with the final criteria in the **Federal Register** and will be available from DOC once published. The application form will include instructions describing the steps to follow for becoming accredited, identification of test methods (individually or in groups) for which accreditation can be sought, and questions relative to the criteria that must be answered as part of a completed application. When a requesting laboratory returns a completed application form, it becomes an official applicant in the program. This is the first of three aspects of the accreditation process. Upon receipt by the National Bureau of Standards (NBS) of a completed application, NBS will send each applicant "supplemental information" relevant to each test method or group of test methods for which it seeks accredition. This "supplemental information" will indicate how each section of the specific criteria is to be interpreted and implemented for each test method for which accreditation is requested. The required fees will also be designated. All fees must be paid before an on-site examination of the laboratory is scheduled. The second and third parts of the accreditation process—the on-site examination and proficiency testing, respectively—will be arranged for by NBS for each applicant.

An evaluation by NBS of the written information on the application form, the on-site examiners' assessment, and any proficiency testing data will form the basis for DOC's decision to accredit an applicant laboratory.

Basic Conditions for Accreditation

In order for a laboratory to be accredited under the NVLAP procedures, it shall agree in writing to the following basic conditions:

(1) Be examined and audited, initially and on a continuing basis;

(2) Pay accreditation fees and charges;

(3) Maintain compliance with applicable general and specific criteria; and

(4) Avoid reference by itself and forbid others utilizing its services from referencing its accredited status in consumer media and in product advertising or on product labels, containers, and packaging or the contents therein.

In addition, each applicant laboratory should be aware that compliance with the general and specific criteria and accreditation by the Secretary of Commerce will in no way relieve the laboratory from the necessity of observing and being in compliance with existing Federal, State, and local statutes, ordinances, and regulations, including consumer protection and antitrust laws, which may be applicable to the operation of the laboratory.

General Criteria

General criteria include characteristics that should be found in reputable testing laboratories. They include general information about a laboratory (e.g., name, address, ownership, management structure); conditions that must be met for accreditation (e.g., agreement to adopt certain policies); and the maintenance of a quality control or a laboratory operations control manual (e.g., written procedures and information addressing the control of staff, physical plant, operational processes, testing control procedures, and quality assurance) for use by laboratory staff in the laboratory.

The minimum information to be included in the above-referenced manual is identified in the specific criteria. In responding to the provisions of the specific criteria, an applicant laboratory develops the minimum written procedures and information necessary for its manual.

For initial and continued accreditation, each applicant shall provide, in writing, information in response to the following provisions:

Criterion G1. *The laboratory has a legally identifiable organizational structure that enables it to develop and maintain a testing capability to perform satisfactorily the functions for which accreditation is sought.*

G1.1 The laboratory shall submit a description of its organization including—

G1.1.1 The name and full address of the laboratory which is seeking accreditation;

G1.1.2 If the laboratory is part of a larger organization, the complete legal name and address of that larger organization;

G1.1.3 Ownership and management structure of the laboratory, including the names and positions of its principal officers and board of directors;

G1.1.4 An outline or organizational chart identifying all key management and supervisory positions in each relevant operating, support, and service unit in the laboratory's functional organization, and defining at least those reporting relationships that are relevant to this accreditation request;

G1.1.5 Position description, including the required qualifications, of the person who has technical responsibility for the laboratory in the testing area(s) for which accreditation is sought; and

G1.1.6 A general description of the laboratory, including its facilities and scope of operation.

G1.2 The laboratory shall submit a statement of any fundamental changes related to the provisions of G1.1 within 30 calendar days of such changes.

Criterion G2. *The laboratory is operated in accordance with generally accepted professional and ethical business practices.*

G2.1 The laboratory shall agree in writing that as a minimum it will be its policy to—

G2.1.1 Perform the tests for which accreditation is sought in accordance with the designated test methods, and to report and explain deviations from those test methods in its test reports;

G2.1.2 Assure that reported values accurately reflect measured data;

G2.1.3 Limit test work to that for which competence and capacity are available;

G2.1.4 Treat test data, records, and reports as proprietary information unless the client agrees in writing to the release of such infomation;

G2.1.5 Respond to and attempt to resolve complaints contesting test results;

G2.1.6 Be capable of performing each test for which it is accredited according to the latest version of each test method within one year after publication or within another time limit specified by the Department of Commerce (DOC);

G2.1.7 Maintain an independent decisional relationship between its clients, affiliates, or other organizations, so that the laboratory's capacity to render test reports objectively and without bias is not adversely affected; and

G2.1.8 Return to DOC its certificate of accreditation should it become unable to conform to any of these general and specific criteria for accreditation.

Note.—Compliance with criterion G2 will be assessed at such time that a complaint or

other evidence, which is received by DOC, impugns the accredited laboratory's compliance with this criterion.

Criterion G3. *The laboratory maintains a quality control system to help assure the technical integrity of its work.*

G3.1 The laboratory's quality control system must include a quality control manual or a laboratory operations control manual containing written procedures and information in response to the applicable requirements of the specific criteria. The procedures and information may be explicitly contained in the manual or may be referenced so that their location in the laboratory is clearly identified. The written procedures and information must be adequate to guide a testing technician (who is deemed qualified by the National Bureau of Standards (NBS) or by an NBS contractor) in conducting the tests in accordance with the test methods for which accreditation is sought.

G3.2 The laboratory shall make a current copy of it quality control manual or laboratory operations control manual available in the laboratory for use by laboratory personnel and shall make the manual available for NVLAP review and audit.

Note.—A quality control manual consists of general quidelines for the quality control of the laboratory's method of operation. Specific information is provided for portions of individual test methods whenever specifics are needed to comply with the criteria or otherwise support the laboratory's operations. A laboratory operations control manual consists of specific procedures and information for each test method responding to the applicable requirements of the specific criteria.

Specific Criteria

Specific criteria are those requirements for accreditation which relate specificially to individual test methods. They are stated in such a manner that they do not have to be changed each time a test method is revised. As required by G3.1, each applicant laboratory shall have a manual containing written procedures and information or identifying the location of such procedures and information in the laboratory which respond to all applicable requirements of the specific criteria. For the test methods for which accreditation is sought, "supplemental information" will be sent to each applicant laboratory showing how each applicable section of the specific criteria relates to the test methods is to be implemented. It also describes how evaluators will assess a laboratory's compliance with these criteria. An example for each LAP of the kind of detail which will be contained in the "supplemental information" is shown in appendices 1, 2, and 3 to this notice. The "supplemental information" will also identify those sections of the specific criteria that are not applicable or not necessary for certain test methods. This is the reason that the phrase, "as applicable," is included in many such sections. Thus, the "supplemental information" tailors the specific criteria to the particular characteristics of individual test methods. Naturally, the "supplemental information" will have to be updated with each revision of the test methods.

The provisions of the specific criteria are the following:

Criterion S1. *The laboratory is staffed by personnel who are competent to perform the tests for which accreditation is sought.*

S1.1 The laboratory shall assure the competency of its staff through the observation and/or examination of each relevant staff member in the performance of each test method. Staff members who perform relatively simple tests at field locations with limited on-site supervision must annually pass an examination supplied by NBS. The observations at the laboratory must be conducted at intervals not exceeding one year by one or more individuals judged qualified by the person who has technical responsibility for the laboratory. In lieu of an annual observation or examination, current certification of staff members by recognized outside agencies in areas of competence encompassing these test methods is acceptable.

S1.2 The laboratory shall make available the description of its training program for assuring that new or untrained staff will be able to perform tests properly and uniformly to the requisite degree of precision and accuracy.

S1.3 The laboratory shall maintain in its personnel files—

(a) A record, including dates and results, of the observation or examination of performance for each test method for which each individual in the laboratory is qualified;

(b) Certification of competence, if any, from recognized outside agencies; and

(c) A listing of training courses completed.

Criterion S2. *The laboratory's facilities, equipment, and procedures are appropriate for accreditation.*

S2.1 The laboratory shall maintain a list of its facilities and equipment required for each test method for which accreditation is sought, and, as applicable, a description of those facilities and equipment including—

(a) Sufficient identification of test instruments to allow correlation with calibration records;

(b) Schematics, drawings, diagrams or photographs of equipment and facilities for demonstrating conformance with the requirements of the test method; and

(c) A description of environmental or sample conditioning equipment and facilities showing how compliance with the requirements of the test method is measured and maintained.

S2.2 The laboratory shall provide evidence of the calibration, verification, and maintenance of the facilities and equipment specified for each test method for which accreditation is sought, through the following:

S2.2.1 A description of the procedures used in calibrating, verifying, and maintaining the test equipment and facilities, including, as applicable—

(a) Calibration and verification equipment or services used;

(b) Reference standards and materials used;

(c) Measurement assurance, collaborative reference, or other programs in which the laboratory participates;

(d) Routine maintenance; and

S2.2.2 Calibration and verification records including, as applicable—

(a) Equipment description or name;

(b) Name of manufacturer;

(c) Model, style, and serial number, or other identification;

(d) Equipment variables subject to calibration and verification;

(e) Range of operation and range of calibration and verification;

(f) Resolution of the instrument and allowable error tolerances on readings;

(g) Calibration or verification schedule (intervals);

(h) Date and result of last calibration or verification and date of the next calibration or verification;

(i) Name of laboratory person or outside service providing the above calibration or verification; and

(j) Traceability to NBS or other authority.

S2.3 The laboratory shall maintain a test plan supplementing each test method for which accreditation is sought which includes, as applicable, instructions for—

(a) Equipment maintenance and verification checks;

(b) Specimen selection, handling, and disposal;

(c) Data collection, analysis, and reporting;

(d) Quality control checks and audits; and

(e) Any subcontractors performing part of the test and a description of how the laboratory assures the required precision and accuracy.

Note.—The intent of this provision, S2.3(e), is to allow subcontractors to perform common repetitive tasks (such as making slides or taking pictures) which are required by certain test methods. However, only laboratories having the measuring equipment by which final test data are obtained can be accredited. If data obtained using one test method in this accredition program are used as input data for a second test method, or if the test procedures for one test method affects the results obtained in a second test method, a laboratory seeking accreditation for the second method must be accredited for the first method also. An accredited laboratory may not present final test data to a client as data from an accredited laboratory unless the final test data were obtained from an accredited laboratory.

S2.4 The laboratory shall maintain, as applicable, documented evidence that no degradation of performance results from the use of equipment, facilities, or procedures which are not in strict conformance with each test method for which accreditation is sought.

Criterion S3. *The laboratory maintains records of its operations.*

S3.1 The laboratory shall maintain records of those testing activities associated with each test method for which accreditation is sought, including the following:

S3.1.1 Test reports containing, as applicable—

(a) Name and address of the laboratory;

(b) Pertinent dates and identifying numbers;

(c) Name of client;

(d) Description and identification of the specimen (including, as necessary, location of the batch, lot, or project of the sampled material from which the specimen was taken);

(e) An appropriate title;

(f) Identification of the test method, procedure, or specification;

(g) Known deviations, additions to, or exclusions from the test method;

(h) Measurements, examinations, derived results, and identification of test anomalies;

(i) If necessary, a statement as to whether or not the test results comply with the requirements of product or project specifications;

(j) Signature of person having technical responsibility for the test report; and

(k) All items required by the test method;

Note.—The laboratory shall make available to NVLAP, upon request, a typical completed test report with the name of the client and source of any product deleted.

S3.1.2 Data generated during testing if not included in the test report, such as raw data, calculations, tables, graphs, sketches, and photographs; and

S3.1.3 Specimen control forms which document the receipt, handling, storage, shipping, and testing of specimens or a written description of the procedures and separate records that are maintained to control these operations.

S3.2 The laboratory shall have copies of applicable standards and other documents referred to or used in performing each test method for which accreditation is sought.

S3.3 The laboratory shall maintain records of its quality control checks and audits for monitoring its test work including—

(a) Records of audit sampling of the test results; and

(b) Records of detected errors and discrepancies and actions taken subsequent to such detection.

S3.4 The laboratory shall maintain a file of written complaints and disposition thereof.

Proficiency Testing

Proficiency testing is an integral part of the NVLAP accreditation process. Of utmost importance to the user of laboratory services is whether or not a testing laboratory consistently obtains reliable results. The existence of facilities, equipment, and personnel, verified by a laboratory's ability to meet the preceding criteria, establishes the capability for obtaining such results. An analysis of actual test results is necessary to determine if these ingredients do in fact produce the desired results. Each LAP has specified proficiency testing requirements. The following paragraphs are not intended to be part of the criteria but rather are part of the program operations. Implementation of these requirements may depend on the number of laboratories applying for each testing area covered, since a sufficient number of participants are necessary to reach statistically valid conclusions about test results submitted by each participant.

Insulation LAP. To be useful as a tool for evaluating laboratories, a statistically significant number of different laboratories must be included in the sample of laboratories participating in the program. Although the laboratories applying for accreditation must expect to participate in proficiency tests where such tests are designated in Appendix 1, it may be that less than a statistically significant number of laboratories request accreditation for one or more of these particular test methods. In such a case, the requirement to participate in a proficiency test for that test method will ordinarily be waived, and the accreditation will be based only on the information submitted by the laboratory and the on-site examiner's assessment.

Values for the desired precision and accuracy for the test methods under the insulation LAP are shown in Appendix 1. For test methods requiring proficiency testing, the precision and accuracy figures represent the values required for demonstrating "good" laboratory performance and the desired degree of proficiency. Approximately 95 percent of the laboratories should be able to achieve this. Limits approximately 50 percent greater are used to define "acceptable" performance for accreditation purposes. The frequency of proficiency testing is also shown in Appendix 1. For test methods not requiring proficiency testing, the precision and accuracy values suggest other guides for attaining desired testing capability.

Concrete LAP. The concrete LAP committee carefully considered distribution of a proficiency sample. However, because of the complexity of preparing the sample and the uncertainty about reaching statistically valid conclusions about the test results, such distribution was not recommended. A somewhat different approach to proficiency testing is being proposed for the concrete LAP.

The proficiency testing requirement consists of two programs: (1) a within laboratory program; and (2) a between laboratory program. Implementation of the between laboratory program will not be required for the first year of accreditation under this LAP. However, all laboratories applying for initial or renewed accreditation under this LAP after the first year of accreditation will be required to establish a between laboratory program.

These two programs are intended to give a laboratory a relatively simple means of checking the uniformity and, to a certain extent, the accuracy of its test results. The procedures for conducting a within laboratory program and a between laboratory program described in Appendix 2 are minimum guidelines (i.e., any laboratory may use a more sophisticated program or statistically rigorous analysis).

The minimum scope of these two proposed programs required for laboratories requesting accreditation under the concrete LAP is as follows:

A Laboratory applying for accreditation for the field test methods only shall—

(1) Monitor the within-test variation of compressive strength test results on cylinder specimens made from the same

sample of concrete by its personnel using compressive strength test data produced by the compression testing facilities which normally break these specimens for the applicant laboratory (the within-laboratory program); and

(2) Compare with at least one other laboratory on a periodic basis compressive strength test results for cylinder specimens made by each laboratory from the same sample of concrete (the between-laboratory program). (Note that after initial curing, a pair of cylinder specimens made by each cooperating laboratory will be transported to a single compression testing facility for completion of curing, capping, and testing.)

A laboratory applying for accreditation for both field and laboratory test methods shall—

(1) Monitor the within-test variation of compressive strength test results on cylinder specimens made and tested by its personnel from the same sample of concrete (the within-laboratory program); and

(2) Compare with at least one other laboratory on a periodic basis compressive strength test results for cylinder specimens made and tested by each laboratory from the same sample of concrete (the between-laboratory program).

Carpet LAP. Proficiency tests are proposed for the test methods shown in Appendix 3. Although it is intended that proficiency must be demonstrated for all of these test methods, that may not be feasible if an insufficient number of laboratories request accreditation for a given test method. In such a case, the accreditation would be based only on the information submitted by the laboratory and the on-site examiner's assessment.

Values for the desired precision and accuracy for the test methods under the carpet LAP are shown in Appendix 3. For test methods requiring proficiency testing, the precision and accuracy figures represent the values required for demonstrating "good" laboratory performance and the desired degree of proficiency. Approximately 95 percent of the laboratories should be able to achieve this. Limits approximately 50 percent greater are used to define "acceptable" performance for accreditation purposes. The frequency of proficiency testing is also shown in Appendix 3. For test methods not requiring proficiency testing, the precision and accuracy values suggest guides for attaining desired capability.

Examination and Audit Procedures

Once an applicant laboratory has satisfactorily completed the written information requested through the application forms, NBS will arrange a visit of the on-site examiner(s) to the laboratory. Before the visit, each applicant will be sent "supplemental information" explaining how each section of the specific criteria is interpreted and implemented for each test method. The visit may last from one to three days or even longer depending on the number and complexity of the test methods for which accreditation is sought. The on-site examiner(s) will conduct an exit interview with the laboratory management at the conclusion of the examination.

Laboratories will be granted accreditation for one year. The yearly accreditation fee must be paid each year before accreditation can be renewed. The proposed fees and charges for all three LAPs are described in a separate notice published in this issue of the **Federal Register.**

A scheduled on-site examination and a complete reassessment of a laboratory's capability will be accomplished for each LAP as follows:

(1) Insulation LAP—each year for the first two years and every two years thereafter.

(2) Concrete LAP—every three years.

(3) Carpet LAP—every two years.

In addition, unannounced visits may occur at any time. These visits may be initiated by the use of a random selection scheme or in response to a specific need because in the opinion of DOC the laboratory appears to have testing problems. A complete review of the laboratory is not contemplated for the unannounced visits. In the case of randomly selected visits, key items in the laboratory will be checked. In the case of visits due to an apparent problem, items relating to the problem will be checked. However, in both cases additional inspection may take place at the discretion of the on-site examiner. Failure to cooperate will be grounds for revocation of accreditation.

Examiner Qualifications

NBS will be responsible for the professional and technical performance of all examiners. The description that follows is not intended to be part of the criteria, but rather is an explanation of part of the program's operations. It is provided in order to give a potential applicant laboratory an indication of the background and capabilities of personnel who will be employed to evaluate the laboratories. These provisions are subject to change as the program evolves.

On-site examiners will be carefully trained to conduct the initial and periodic on-site examinations, so that all aspects of these examinations will be reasonably consistent from test method to test method and from laboratory to laboratory.

NBS evaluators will review the submitted information, the on-site examination report, and the results of any proficiency testing, and make an evaluation of the laboratory for the purpose of recommending the approval, denial, or revocation of accreditation. Evaluators may also participate in some on-site examinations. Each evaluator will be a technical expert in those fields of testing covered by one or more LAPs. There will be at least on evaluator for each LAP experienced in performing the specific test methods included in each LAP and in performing day-to-day laboratory operations.

These examiners and evaluators will be government employees or NBS contract employees. One of the key considerations in selecting personnel to work on each LAP will be to minimize potential conflicts of interest.

Appendix 1.—Insulation LAP (NVLAP-01) Operational Information

Section 1A—List of Methods, Performance Guidelines and Proficiency Testing Requirements.

The test methods and performance guidelines for this LAP for thermal insulation materials are shown in Exhibit 1A. The tests are the latest versions applicable and are identified by a NVLAP Code Number, a recognized test method number, and a short title. The performance guidelines are given in the column titled, "Desired Precision and Accuracy." The capability of a laboratory to perform within the guidelines will be assessed from the written information it submits and from the findings of an on-site inspection.

The ability of a laboratory to apply this capability is determined from the results of proficiency testing.

Test methods which require proficiency testing are identified in the column titled, "Test Frequency (Times Per Year)." Samples for these tests will be distributed at the frequency shown. The distribution of samples and analysis of resulting data will be handled through a currently designated Collaborative Reference Program for Thermal Insulation Materials cosponsored by Collaborative Testing Services, Inc., and the National Bureau of Standards.

The peformance guideline precision statement is expressed in terms of repeatability (R), which is a measure of the ability of a laboratory to repeat its own test result on the same or essentially identical samples. Accuracy (A), is a measure of the ability of a

laboratory to obtain a test result in agreement with the "true" or target test result. The limits specified in Exhibit 1A for precision and accuracy are for "good" performance. Approximately 95% of the laboratories should be able to achieve this. Limits approximately 50% wider are used to define "acceptable" performance for accreditation purposes. The limits presented in this exhibit are for laboratory accreditation purposes only and should *not* be interpreted as setting specification limits on products. Specific comments which pertain to individual test methods relative to proficiency testing are shown in the last column of Exhibit 1A.

Values for precision and accuracy are listed in Exhibit 1A for some test methods even though a proficiency test is not required for those tests. This information is given as a guide to the laboratory for assessing its own testing capability in lieu of a proficiency sample. This also represents the level of capability expected by NVLAP of the laboratories performing those tests.

The column labeled "Complexity" showing the letter B followed by the subscript 1, 2 or 3 indicates the complexity of the test method for examination purposes. These are used to determine examination costs and are explained in a spearate Federal Register Notice describing accreditation fees.

[FR Doc. 79-30178 Filed 9-27-79 8:45 am]

BILLING CODE 3510-13-M

Exhibit 1A

NVLAP Code Test Method No.	Com-plex-ity	Short title (property) Subtitle (if applicable)	Desired Precision and Accuracy	Test Frequency (Times per Year)	Comments
01/C01 ASTM C739 (para. 7.7 in 77 version)	B_2	Corrosiveness; Cellulosic fiber (loose-fill)	Non-quantitative Test		
01/C02 HH-I-515 (para. 4.8.5 in D version)	B_2	Corrosiveness; Cellulosic fiber (loose-fill)	Non-quantitative Test		
01/D01 ASTM C136	B_1	Sieve or screen analysis	R=4 percent aggregate A=4.4 percent aggregate		
01/D02 ASTM C167	B_1	Thickness and density Blanket and batt	Thickness: A=1/16 in. (1.0 mm) Density: A=2%		
01/D03 ASTM C209 (para. 6 in 72 version)	B_1	Thickness Board (cellulosic fiber)	A=0.1 mm		
01/D04 ASTM C209 (para. 13 in 72 version)	B_1	Water absorption, 2 hour Board (cellulosic fiber)	A=25% of percent water absorption	2	accreditation for one or more of D04, D05, D07 requires demonstrated proficiency in only one of these tests
01/D05 ASTM C209 (para. 13 in 72 version) by D1037 (para. 100-106 in 72 version)	B_1	Water absorption, 24 hour Board (cellulosic fiber)	A=25% of percent water absorption	2	accreditation for one or more of D04, D05, D07 requires demonstrated proficiency in only one of these tests

NVLAP Code Test Method No.	Complexity	Short title (property) Subtitle (if applicable)	Desired Precision and Accuracy	Test Frequency (Times per Year)	Comments
01/D06 ASTM C209 (para. 13 in 72 version) by D1037 (para. 107-110 in 72 version)	B_2	Linear expansion Board (cellulosic fiber)	A=0.1 percent expansion		
01/D07 ASTM C272	B_1	Water absorption Core materials	A=25% of percent water absorption	2	accreditation for one or more of D04, D05, D07 requires demonstrated proficiency in only one of these tests
01/D08 ASTM C302	B_1	Density Preformed pipe insulation	Thickness: A = 1 mm Density: A = 2%		
01/D09 ASTM C303	B_1	Density Preformed block insulation	A = 2%		
01/D10 ASTM C355	B_2	Water vapor transmission Thick materials Desiccant method	A = 25%	2	
01/D11 ASTM C356	B_1	Linear shrinkage Soaking heat Preformed high temperature insulation	R = 0.5 percent linear shrinkage A = 0.5 percent linear shrinkage		
01/D12 ASTM C411	B_1	Hot-surface performance High temperature insulation	Warpage: A = 1 mm		
01/D13 ASTM C519	B_2	Density Loose-fill (fibrous)	A = 2%		
01/D14 ASTM C520	B_2	Density Granular loose-fill	A = 2%		
01/D15 ASTM D756	B_2	Weight and shape changes Accelerate service (Proc. A) Plastics	A = 0.5 percent weight change A = 0.5 percent linear dimension change A = 1.5 percent volume change		

NVLAP Code Test Method No.	Complexity	Short title (property) Subtitle (if applicable)	Desired Precision and Accuracy	Test Frequency (Times per Year)	Comments
01/D16 ASTM D756	B_2	Weight and shape changes Accelerated service (Proc. B) Plastics	Same as for 01/D15		
01/D17 ASTM D756	B_2	Weight and shape changes Accelerated service (Proc. E) Plastics	Same as for 01/D15		
01/D18 ASTM D1622	B_2	Apparent density Rigid cellular plastics	A = 4%		
01/D19 ASTM D2126	B_2	Response to thermal and humid Aging (Procedure B) Rigid cellular plastics	A = 0.5 percent weight change A = 0.5 percent linear dimension change		
01/D20 ASTM D2126	B_2	Response to thermal and humid Aging (Procedure D) Rigid cellular plastics	Same as 01/D19		
01/D21 ASTM D2126	B_2	Response to thermal and humid Aging (Procedure E) Rigid cellular plastics	Same as 01/D19		
01/D22 ASTM D2126	B_2	Response to thermal and humid Aging (Procedure F) Rigid cellular plastics	Same as 01/D19		
01/D23 ASTM D2842	B_2	Water absorption Rigid cellular plastics	A = 1.0 percent absorption (by volume)	2	
01/D24 ASTM C739 (para. 7.5 in 77 version)	B_2	Moisture absorption Cellulosic fiber (loose-fill)	A = 25% percent water absorption	1	a single proficiency test is needed for either D24 or D25
01/D25 HH-I-515 (para. 4.8.3 in D version)	B_2	Moisture absorption Cellulosic fiber (loose-fill)	A = 25% percent water absorption	2	a single proficiency test is needed for either D24 or D25

NVLAP Code Test Method No.	Complexity	Short title (property) Subtitle (if applicable)	Desired Precision and Accuracy	Test Frequency (Times per Year)	Comments
01/D26 HH-I-515 (para. 4.8.1 in D version)	B_2	Settled density Cellulosic fiber (loose-fill)	A = 3%	2	
01/F01 ASTM D777 ,as modified by Federal Specification H-H-8-100B	B_1	Flammability Paper and paperboard	Char length: R = 3.6% A = 9.0% Fire Resistance permanence: R = 6 percent increase in char length A = 10 percent increase in char length		
01/F02 ASTM E84	B_3	Surface burning characteristics Building materials	Flame spread classification: A = 20% Smoke classification: A = 40%	2	
01/F05 ASTM E136	B_1	Noncombustibility Elementary materials	Primarily a non-quantitative test		
01/F06 ASTM C739 (para. 10.4 in 77 version)	B_3	Flame resistance permanency cellulosic fiber (loose-fill)	A = 20% flame spread	2	
01/F07 HH-I-515 (para. 4.8.7 in D version)	B_3	Critical radiant flux Radiant Panel (cellulosic fiber, loose-fill)	A = 14% R = 20%	2	
01/F08 HH-I-515 (para. 4.8.8 in D version)	B_2	Smoldering combustion cellulosic fiber (loose-fill)	A = 20% R = 20%	2	
01/S01 ASTM C165	B_2	Compressive properties Thermal Insulation Procedure A	A = 4%	2	
01/S02 ASTM C203	B_2	Breaking load/flexural strength Preformed block insulation	Breaking load: A = 2% Flexural strength: A = 10%	2	

NVLAP Code Test Method No.	Complexity	Short title (property) Subtitle (if applicable)	Desired Precision and Accuracy	Test Frequency (Times per Year)	Comments
01/S03 ASTM C209 (para. 9 in 72 version)	B_2	Transverse strength Board (cellulosic fiber)	A = 4%		Both S01 and S02 proficiency tests are required for accreditation of any one or all S03, S04, S05, S06, S07 S08
01/S04 ASTM C209 (para. 10 in 72 version)	B_2	Deflection at specified load Board (cellulosic fiber)	A = 0.2 mm		Eligible for accreditation only if accredited for 01/S03
01/S05 ASTM C209 (para. 11 in 72 version)	B_2	Tensile strength Parallel to surface Board (cellulosic fiber)	A = 15%		
01/S06 ASTM C209 (para. 12 in 72 version)	B_2	Tensile strength Perpendicular to surface	A = 4%		
01/S07 ASTM C273	B_2	Shear test Sandwich construction	A = 25%		
01/S08 ASTM C446	B_2	Breaking load/modulus of rupture Preformed pipe insulation	Breaking load: A = 2% Modulus of rupture: A = 5%		
01/S09 ASTM D781	B_2	Puncture test Paperboard and fiberboard	R = 7.3% A = 8.0%		
01/S10 ASTM D828	B_2	Tensile breaking strength Paper and paperboard	R = 5% A = 11%	6	
01/S11 ASTM D1621	B_2	Compressive properties Rigid cellular plastics Procedure A - Crosshead	A = 6%		Both S01 and S02 proficiency tests are required for accreditation of S11
01/T01 ASTM C177	B_3	Thermal transmission properties Low-temperature guarded hot plate	R = 1% A = 4%	2	Not required if in T06
01/T04 ASTM C236	B_3	Thermal conductance Guarded hot box	A = 4%	1	

NVLAP Code Test Method No.	Complexity	Short title (property) Subtitle (if applicable)	Desired Precision and Accuracy	Test Frequency (Times per Year)	Comments
01/T05 ASTM C335	B_3	Thermal conductivity Pipe insulation	A = 4%	2	
01/T06 ASTM C518	B_3	Thermal transmission properties Heat flow meter	R = 1% A = 4%	2	Not required if in T01
01/T09 ASTM C653	B_2	Thermal resistance (Rec. Practice) Blanket (mineral fiber)	See 01/T01 and 01/T06		Eligible for accreditation only if laboratory is accredited for C177, C236 or C518
01/T10 ASTM C687	B_2	Thermal resistance (Rec. Practice) Loose-fill (fibrous)	See 01/T01, 01/T04 and 01/T06		Eligible for accreditation only if laboratory is accredited for C177, C236 or C518
01/V02 ASTM D591	B_1	Starch in paper Qualitative test	Non-quantitative Test		
01/V03 ASTM D2020	B_1	Mildew (fungus) resistance Paper and paperboard	Non-quantitative Test		
01/V04 ASTM E96	B_2	Water vapor transmission Thin sheets Procedure A	R = 19% A = 25%		
01/V05 HH-I-515 (para. 4.8.6 in D version)	B_1	Fungus, Cellulosic fiber (loose-fill)	Non-quantitative Test		
01/V06 HH-I-515 (para. 4.8.9 in D version)	B_1	Starch, Cellulosic fiber (loose-fill)	Non-quantitative Test		

Section 1B - Example of "supplemental information" for one test method.

For each test method included in the NVLAP program, a document entitled "Supplemental Information for the Requirements of the Specific Criteria for Test Method: _____" has been prepared. This document relates the requirements of the criteria to each of the test methods, specifically stating how the criteria will apply. It also describes how evaluators will assess compliance to the criteria for the test method to which it applies.

A copy of the "supplemental information" for each test method for which accreditation is sought will be sent to the laboratory upon receipt of its application. The supplemental information will address each section of the specific criteria. Personnel check sheets and other documentation will be provided if appropriate for the test method. Any requirements of the criteria which do not apply to the test method will be stated. The "supplemental information" will not extend the criteria into new areas but will qualify and define the criteria for the particular test method.

Exhibit 1B presents an example of the "supplemental information" for ASTM Test Method E84-77a. The "supplemental information" will be updated to comply with revisions in the test methods and the final criteria when published.

Exhibit 1B

SUPPLEMENTAL INFORMATION FOR THE
REQUIREMENTS OF THE SPECIFIC CRITERIA FOR TEST METHOD:

ASTM E84-77a

"Surface Burning Characteristics of Building Materials"

Introduction

This "supplemental information" for test method ASTM E84-77a is intended to indicate how each section of the specific criteria is to be interpreted and implemented.

Specific Criteria Section	Supplemental Information Corresponding to the Appropriate Sections of the Specific Criteria
S1.1	The laboratory's qualifying program must have provisions for observing the performance of each staff member authorized to conduct ASTM E84. (See Personnel Check Sheet, Attachment 1.) An on-site examiner shall verify that the laboratory has such provisions.
S1.2	The laboratory shall have, as a minimum, a documented on-the-job training program for new or untrained persons responsible for this test method. The on-the-job training program shall include: 1. A thorough understanding of the requirements of the test method and the design of the tunnel. 2. A thorough understanding of all tunnel operations required by ASTM E84, pertaining to testing thermal insulation materials, including calibration procedures. 3. The supervisor and operator must have basic understanding of the requirements of any other standard methods which form a part of or are needed to perform the test.
S1.3	The laboratory shall maintain a file containing all items (a-c) required by section S1.3.
S2.1	The laboratory shall have a list and, as appropriate, a description of its facilities and equipment. In addition, the laboratory shall verify that the following equipment complies with the provisions of ASTM E84. 1. Conditioning facilities 2. Rods and screening for mounting batt and loose-fill materials, respectively 3. Steiner tunnel which complies with the material and dimensional requirements of ASTM E84.
S2.2.1	The laboratory shall have written procedures for calibrating or verifying the equipment listed in Table 1 and have adequate written procedures for maintaining its equipment and facilities.
S2.2.2	The laboratory shall maintain calibration and verification records including data addressing those items designated by an "X" in Table 1.

Table 1

ASTM E84-77a Equipment requiring written calibration or verification procedures and records

	Steiner Tunnel	Manometer	Thermocouples and Instrumentation	Photoelectric Cells and Instrumentation	Smoke Meter
(a) Equipment description or name					
(b) Name of manufacturer	X	X	X	X	X
(c) Model, style, and serial number, or other identification	X	X	X	X	X
(d) Equipment variables subject to calibration and verification	X	X	X	X	X
(e) Range of operation and range of calibration and verification	X	X	X	X	X
(f) Resolution of the instrument and allowable error tolerances on readings		X	X	X	X
(g) Calibration or verification schedule (intervals)	Monthly	Annual visual inspection	12 months	12 months	12 months
(h) Date and results of last calibration or verification and date of the next calibration or verification	X	X	X	X	X
(i) Name of laboratory person or outside service providing the above calibration or verification	X	X	X	X	X
(j) Traceability to NBS or other authority					

S2.3 The laboratory shall have a written test plan containing items a - d and, if a subcontractor performs part of this test, item e of Section S2.3.

S2.4 The laboratory shall show that no degradation of test results occurs due to equipment, facilities, or procedures not in strict conformance with ASTM E84.

S3.1.1 The laboratory retains copies of its ASTM E84 test reports containing items a - k of S3.1.1.

S3.1.2 The laboratory retains copies of the data generated during testing which is not included in its ASTM E84 test reports (i.e., raw data sheet for recording test results).

S3.1.3 The laboratory has control records documenting the receipt, handling storage, shipping and testing of ASTM E84 test specimens.

S3.2 An on-site examiner shall verify that the laboratory maintains an inventory of the latest published versions of the following standards:

ASTM E84 - Surface Burning Characteristics of Building Materials

ASTM D2016 - Tests for Moisture Content of Wood

ASTM C665 - Mineral Fiber Blanket Insulation

ASTM C739 - Specification for Cellulose Fiber loose-fill

HH-I-558B - Federal Specification for Thermal Insulation - board, block and pipe covering

HH-I-100B - Federal Specification for Vapor Barrier Materials

HH-I-521E (1) - Federal Specification for Thermal Insulation Blankets

HH-I-545B (1) - Federal Specification for Acoustical Insulation

S3.3 An on-site examiner shall verify that the laboratory has records of any detected testing errors or discrepancies and subsequent actions taken.

S3.4 An on-site examiner shall verify that the laboratory maintains a file of written complaints and disposition thereof.

Exhibit 1B
Attachment 1

Personnel Check Sheet - ASTM E84

Laboratory Staff Member _____

In fulfillment of Section S1.1, the supervisor or his/her designee shall observe the performance of each staff member being qualified to perform this test method or portions thereof and shall record that performance by checking off, as a minimum, those items which follow. The performance check is recorded on this check sheet and filed in the employee personnel file in fulfillment of Section S1.3(a).

	Satisfactorily Completed
1. Proper calibration procedure.	_____
2. Correct placement of free-standing bricks in tunnel.	_____
3. Record data in strict conformance with ASTM E84.	_____

Supervisor _____ Date _____

Operational Information

Section 2A - Test Method Grouping.

The test methods included in this LAP for freshly mixed field concrete are shown in Exhibit 2A. The tests are the latest versions applicable and are identified by a NVLAP Code Number, a recognized test method number, and a short title. Because the tests are inherently interrelated, accreditation will be granted in two groups rather than per individual test method. The two groups are identified in Exhibit 2A and are respectively the Field Group and the Field and Laboratory Group.

The field and laboratory group includes all of the test methods covered by the LAP. The field group includes only those test methods covered by the LAP which are performed outside the laboratory at a project or field site. A laboratory may apply for accreditation for either group. Each applicant laboratory must have the capability to perform all test methods within the group to be accredited with the exception that 02/A02, ASTM C173 is optional.

Exhibit 2A

NVLAP Code Test Method No.	Short Title	Test Method Group: Field	Test Method Group: Field and Laboratory
02/M01 ASTM C31	Making and Curing Concrete Test Specimens in the Field	X	X
02/M02 ASTM C192	Making and Curing Concrete Test Specimens in the Laboratory	--	X
02/M03 ASTM C172	Sampling Fresh Concrete	X	X
02/S01 ASTM C39	Compressive Strength of Cylindrical Concrete Specimens	--	X
02/P01 ASTM C143	Slump of Portland Cement Concrete	X	X
02/W01 ASTM C138	Unit Weight, Yield, and Air Content (Galvimetric) of Concrete	X	X
02/A01 ASTM C231	Air Content of Freshly Mixed Concrete by the Pressure Method	X	X
02/A02 ASTM C173	Air Content of Freshly Mixed Concrete by the Pressure Method	X (optional)	X (optional)

Section 2B - Proficiency Testing Requirements.

The proficiency testing requirement for the concrete LAP is composed of a within-laboratory program and a between-laboratory program.

WITHIN-LABORATORY PROGRAM

Purpose. A within-laboratory program is designed to allow a laboratory to monitor the uniformity of its test results produced as a normal part of its operations. More specifically, the program provides a means for measuring the ability of a laboratory to repeat its own test result on cylinder specimens made from a sample of concrete taken from a single batch. This "repeatability" characteristic is commonly referred to in the concrete standards literature as within-test variation (see American Concrete Institute Standard Recommended Practice for Evaluation of Strength Test Results of Concrete, ACI 214-77). A statistical measure of within-test variation is the coefficient of variation. The method outlined under the paragraph, entitled "Data Analysis Method," provides a step-by-step procedure for calculating the coefficient of variation and guidelines for interpreting the significance of such calculated values.

General Procedures. The procedures for carrying out a within-laboratory program are slightly different depending on whether a laboratory applies for accreditation for the field test method group or for the field and laboratory test method group. For the field group, each applicant laboratory shall monitor the within-test variation of compressive strength test results on cylinder specimens made from the same sample of concrete by its personnel using compressive strength test data produced by the compression testing facilities which normally break these specimens for the applicant laboratory. For the field and laboratory group, each applicant laboratory shall monitor the within-test variation of compressive strength test results on cylinder specimens made and tested by its personnel from the same sample of concrete.

Data Analysis Method. The following method for monitoring within-test variation applies for both test method groups:

(1) Randomly select at least ten tests per week and calculate the range, R for each test. If less than 10 tests were made in a given week use as many tests as were conducted. A test, as defined by ACI 214, is the average strength of all specimens--usually two or three of the same age fabricated from a sample taken from a single batch of concrete.

(2) Calculate the coefficient of variation (V) for each test using the following formula:

$$V = \frac{R \times 1/d_2 \times 100}{\bar{X}} \text{ percent}$$

where: R = difference between the lowest and highest values for the companion cylinder specimens

$1/d_2$ = conversion factor:
for two companion cylinder specimens, $1/d_2 = 0.886$
for three companion cylinder specimens, $1/d_2 = 0.591$

$\bar{X}$ = average strength for the companion cylinder specimens for each test.

(3) Identify all V's that exceed 10%. The 10% figure is comparable to the D2S% limit. Values for the coefficient of variation over 10% should occur no greater than one in twenty tests. If the frequency is greater than one in twenty, the laboratory should check its operations for possible procedural aberrations.

(4) Calculate the average of the coefficient of variation ($\bar{V}$) for all the tests randomly selected each week, using the formula:

$$\bar{V} = \frac{\sum_{1}^{n} V}{n}$$

where: n = number of tests randomly selected for sampling for the week.

(5) Calculate a five week moving average ($\bar{\bar{V}}$) of the weekly averages of the coefficient of variation ($\bar{V}$) or the five most recent weeks, using the formula:

$$\bar{\bar{V}} = \frac{\sum_{x-4}^{x} \bar{V}}{5}$$

where: x = number of weeks that have elapsed since the beginning of the within-laboratory program.

(6) Rate each moving average coefficient of variation ($\bar{\bar{V}}$) as follows:

Rating	$\bar{\bar{V}}$ (%)
Satisfactory (SAT)	below 5.0
Unsatisfactory (UNSAT)	above 5.0

(7) Prepare a table showing at least the following information:

Week Ending	Approximate Number of Tests for Week	No. of Tests Sampled for Week	No. of $\bar{V}_i$ Exceeding 10%	$\bar{V}$(%)	$\bar{\bar{V}}$(%)	Rating

This table provides a check on the uniformity of the laboratory's testing operations. Values for the five week moving average coefficient of variation should not be greater than 5 percent. If they are greater than 5 percent, the laboratory must investigate its operations to find the possible causes for this wide variation and tighten its quality control accordingly. Actions taken to remove the causes of variation identified must be recorded and filed. Raw data used to compile the table for at least the five most recent weeks must be available for NVLAP audit. (Note: It is recognized that responsibility for within-test variations is shared when others test cylinder specimens.)

An example of a within-test variation table follows:

Week Ending	Approximate Number of Tests for Week	No. of Tests Sampled for Week	No. of $\bar{V}_i$ Exceeding 10%	$\bar{V}$(%)	$\bar{\bar{V}}$(%)	Rating
3/3	85	10	0	4.0		
3/10	110	10	1	6.0		
3/17	100	10	0	3.0		
3/24	125	10	1	5.0		
3/31	115	10	0	3.0	4.2	SAT
4/7	90	10	1	7.0	4.8	SAT
4/14	140	10	3	11.0	5.8	UNSAT
4/21	130	10	1	8.0	6.8	UNSAT
4/28	145	10	1	5.0	6.8	UNSAT
5/5	120	10	0	3.0	6.8	UNSAT
5/12	140	10	0	2.0	5.8	UNSAT
5/19	160	10	0	4.0	4.4	SAT
5/26	180	10	0	2.0	3.2	SAT
6/2	170	10	0	2.0	2.6	SAT

Requirements. The following are the proposed operational requirements for the within-laboratory program:

(1) The laboratory shall agree to have its within-laboratory program implemented before the on-site examination is performed or within 90 days after the date of application for accreditation.

(2) The NVLAP on-site examiners shall verify that the within-laboratory program is documented and operational. Copies of pertinent documents may be requested.

(3) The laboratory shall document the procedures used to respond to problem areas of testing identified by unsatisfactory ratings under the within-laboratory program. Copies of pertinent documents may be requested.

(4) The on-site examiner shall randomly select from the laboratory's test results an amount equal to the number used by the laboratory to derive its values. The on-site examiner's calculated values shall fall within the 95% range of the value calculated by the laboratory. If not, a second set of random data shall be selected by the on-site examiner. If this set of data is outside of the 95% range, then the on-site examiner shall use the same laboratory's data to calculate the required values. In addition, the on-site examiner shall review the laboratory's random sampling process and may request copies of pertinent documents for NBS review.

(5) The laboratory shall submit to NBS a copy of the within-test variation table of figures for at least three consecutive weeks within a three month operating period. The laboratory shall make two such submissions during its operating season with the minimum time between submissions being at least six weeks.

BETWEEN-LABORATORY PROGRAM

Purpose. A between-laboratory program is designed to produce, for each cooperating laboratory, information related to the reliability of its test results. By periodically comparing the compressive strength test results obtained by each cooperating laboratory using the same sample of concrete tested at the same age, differences in the test results can be calculated. If such differences are too large (i.e., statistically significant), the cooperating laboratories may reasonably conclude that aberrations are present in the testing procedures of one or the other laboratory, or possibly both laboratories. In such a case, a close review of each cooperating laboratory's testing procedures is warranted so that any aberrations may be identified and corrected. The method outlined under the paragraph, entitled "Data Analysis Method," provides a step-by-step procedure for calculating the differences and for interpreting the significance of such calculated values.

General Procedures. The procedures for carrying out a between-laboratory program are slightly different depending on whether a laboratory applies for accreditation for the field test method group or for the field and laboratory test method group (see Exhibit 2A). For the field group, each applicant laboratory shall compare with at least one other laboratory on a periodic basis compressive strength test results for cylinder specimens made by each laboratory from the same sample of concrete. After initial curing, a pair of cylinder specimens made by each cooperating laboratory will be transported to a single compression testing facility for final moist curing, capping, and testing. For the field and laboratory group, each applicant laboratory shall compare with at least one other laboratory on a periodic basis compressive strength test results for cylinder specimens made and tested by each laboratory from the same sample of concrete.

Each applicant laboratory shall arrange with another laboratory(ies) a periodic schedule for comparing compressive strength test results. For each comparison, the cooperating laboratories shall select a mutually convenient time and project site for obtaining concrete samples. Each sample selected must be large enough for each cooperating laboratory to make two companion cylinder specimens. The sample must be part of either laboratory's routine work. It is suggested that the laboratories alternate visits to each other's project sites so that the expense of extra trips can be equally shared. For each sample, each cooperating laboratory shall independently mold, cure, transport, ship, store, cap, and test at seven days age its pair of cylinder specimens. The concrete should have a specified nominal compressive strength between 3,000 and 5,000 psi and a slump exceeding two inches.

Data Analysis Method. The following method for two cooperating laboratories making the comparison applies for both test method groups:

(1) Test the two cylinder specimens in accordance with ASTM C 39.

(2) Calculate the average strength ($\bar{X}$).

(3) Calculate the difference, D, between each laboratory's results:

$$D = (\bar{X}_a - \bar{X}_b)$$

where: D = the difference between each laboratory's average strength

$\bar{X}_a$ = average strength of laboratory A's cylinder specimens

$\bar{X}_b$ = average strength of laboratory B's cylinder specimens

(Note: Always keep the laboratory identification the same since "D" may be either plus or minus.)

(4) Calculate the average difference of the current and previous 5 comparisons, or the total number of comparisons if fewer than six but more than three as follows:

$$\bar{D} = \frac{\Sigma D}{n}$$

where: $\bar{D}$ = average difference

ΣD = algebraic sum of differences using the sign of each difference

n = number of differences.

(5) Calculate the standard deviation of "n" differences as follows:

$$S = \left[\left[(\Sigma D^2) - (\Sigma D/n)^2\right] \div (n-1)\right]^{1/2}$$

where: ΣD^2 = algebraic sum of squared differences.

(Note that these calculations are easily made on inexpensive hand-held calculators.)

(6) Calculate the significant difference, SD, as follows:

$$SD = (tS) \div (n)^{1/2}$$

where: t = student "t" statistic from Table 1 below.

Table 1. Values of Student "t" at $\alpha = .01$

n	t
3	9.92
4	5.84
5	4.60
6	4.03

(7) Compare the average difference $\bar{D}$ and the significant difference SD. Conclude that: the cooperating laboratories are probably obtaining significantly different results if $\bar{D}$ exceed plus or minus SD. (Note that $\bar{D}$ and S are recomputed each time a comparison is made and the consecutive values of $\bar{D}$ and S are not statistically independent or random. Therefore, significant differences will be indicated more often than once in 100 ($\alpha = .01$) when no real difference exists. Also, since the values are not statistically independent, there will be a tendency for $\bar{D}$ to exceed SD on consecutive comparisons.)

(8) Examine the sign of consecutive individual differences D and conclude: (a) that it is likely that the cooperating laboratories are obtaining different results if five consecutive differences have the same sign, and (b) that it is certain that the laboratories are obtaining different results if seven consecutive differences have the same sign.

(9) Examine each individual difference and conclude: that a gross error has likely taken place if the difference, either plus or minus, exceeds 3S where S is computed from at least 6 values of D.

(10) Tabulate the results as follows:

Item	Date
1. Sample Description	
2. Class Concrete	
3. Lab A, $\bar{X}_a$	
4. Lab B, $\bar{X}_b$	
5. D	
6. $\bar{D}$	
7. S	
8. n	
9. SD	
10. 3S	
11. Action required?	

(11) When any excessive differences are detected using the methods in paragraphs 7 ($\bar{D}$ exceeding SD), 8 (5 to 7 values of D are the same sign), and 9 (D exceeding 3S), a careful review of each cooperating laboratory's testing procedures must be done to identify any aberrations that may be present. Generally, an additional between-laboratory comparison should be scheduled to verify that aberrations have been eliminated. However, no mandatory rules can be established since either or both laboratories may contribute to the difficulty and the cooperating laboratory may not be accredited. In some instances the cause for an errant result may become clearly apparent such as an error in report transcription or an error in labeling a specimen.

"Other" Cooperating Laboratory Qualifications. Each applicant laboratory shall select its "other" cooperating laboratory(ies) which must meet at least one of the following qualifications:

(1) Be a NVLAP accredited laboratory.

(2) Be a nonaccredited commercial testing laboratory.

(3) Be a laboratory administered by a state, municipality, or other governmental agency.

(4) Be a laboratory operated by a representative of a contractor, engineer, architect, concrete producer, or other agency on a job.

(5) Consist of two different laboratories (one of which does the field tests and the other of which does the laboratory tests). The field tests consist of making the cylinder specimens, providing initial curing, and transporting the specimens to the laboratory. The laboratory tests consist of curing, capping, and testing the cylinder specimens.

In unusual circumstances under which no other qualified laboratory is available, different groups of employees of the same laboratory can perform as the "other" laboratory provided:

(a) The two groups are employed by different divisions of the same laboratory and report to persons other than those responsible for the supervision and operation of the laboratory seeking accreditation.

(b) The testing operations are carried out completely separately with initial curing, transporting, stripping, final curing, capping and testing being done by different personnel using facilities and equipment physically remote and clearly distinct from one another.

In circumstances where there is no laboratory with acceptable curing, capping, and testing facilities in a convenient geographical area, it may be necessary for the cooperating laboratories to carefully pack and ship or transport the specimens by truck, bus, or other means to a laboratory with appropriate facilities. Preliminary contacts with individual state highway and transportation departments have indicated that they may be receptive to requests for their participation as an agency to receive, cure, cap, and test cylinder specimens.

There is no mandatory requirement for the period of time the "other" cooperating laboratory should remain with the accredited laboratory. However, a minimum period of one year is recommended.

Requirements. The following are the proposed operational requirements for the between-laboratory program:

(1) Each applicant laboratory shall implement the between-laboratory program before July 1, 1981.

(2) Each applicant laboratory shall be responsible for obtaining the "other" cooperating laboratory.

(3) Each applicant laboratory shall arrange a comparison test an average of every six weeks of the laboratory's annual operating season with the maximum period between comparison tests of ten weeks.

(4) Each applicant laboratory shall submit to NVLAP a copy of the comparison test results table at least once every six months during its operating season. A minimum of two submissions per operating season with the minimum time between submissions of at least six weeks is required.

(5) The NVLAP on-site examiner shall verify that the between-laboratory program is documented and operational. Copies of pertinent documents may be requested.

(6) The on-site examiner shall look for documented evidence, in a file, of timely action taken to identify and correct causes of aberrations. Copies of pertinent documents may be requested.

Section 2C - Example of "supplemental information" for one test method.

For each test method included in the NVLAP program, a document entitled "Supplemental Information for the Requirements of the Specific Criteria for Test Method: _____" has been prepared. This document relates the requirements of the criteria to each of the test methods, specifically stating how the criteria will apply. It also describes how evaluators will assess compliance to the criteria for the test method to which it applies.

A copy of the "supplemental information" for each test method for which accreditation is sought will be sent to the laboratory upon receipt of its application. The "supplemental information" will address each section of the specific criteria. Personnel check sheets and other documentation will be provided if appropriate for the test method. Any requirements of the criteria which do not apply to the test method will be stated. The "supplemental information" will not extend the criteria into new areas but will qualify and define the criteria for the particular test method. Exhibit 2C presents an example of "Supplemental Information for ASTM Test Method C39-72." The "supplemental information" will be updated to comply with revisions in the test methods and the final criteria when published.

Exhibit 2C

SUPPLEMENTAL INFORMATION FOR THE
REQUIREMENTS OF THE SPECIFIC CRITERIA FOR TEST METHOD:

ASTM C39-72

"Compressive Strength of Cylindrical Concrete Specimens"

Specific Criteria Section	Supplemental Information Corresponding to the Appropriate Sections of the Specific Criteria
S1.1	The laboratory's qualifying program must have provisions for observing the performance of, and administering a written or oral closed book examination to, each staff member authorized to conduct ASTM C39, see Personnel Check Sheet (Attachment 1) and Example Closed Book Examination (Attachment 2). The on-site examiner shall verify that the laboratory has such provisions. In addition, the on-site examiner shall observe the performance of the testing staff selected by the laboratory to conduct the parts of the test for which they are qualified. If any of the selected staff member(s) performance is judged unsatisfactory by the on-site examiner, then the personnel responsible for administering and conducting the laboratory's training and qualifying programs will be asked by the on-site examiner to demonstrate their competence in conducting that portion of ASTM C39.
S1.2	The laboratory shall have, as a minimum, a documented on-the-job training program for new or untrained staff to compressive strength testing. The training program may be subject to further assessment should the on-site examiner find deficiencies when observing the performance of the testing staff authorized to perform this test. The documented program shall cover: 1. A general understanding of the requirements of ASTM C39 . 2. Basic understanding of the general design of the testing machine. 3. Thorough understanding of all operations of the testing machine as required by ASTM C39 including: (a) use and maintenance of the lower and upper bearing blocks, (b) alignment of test cylinder prior to testing, (c) rates of loading. 4. Basic understanding of the requirements of standard methods which form a part of or are needed to perform the test, i.e., ASTM E4, C617, C31.
S1.3	The on-site examiner shall verify that the laboratory maintains a file containing all items (a-c) required by section S1.3.
S2.1	The on-site examiner shall verify that the laboratory has a list and, as appropriate, a description of its facilities and equipment. In addition, the on-site examiner shall verify that the following equipment complies with the provisions of ASTM C39. 1. Compression Testing Machine (capacity, type or loading, and indicating system). 2. Steel Bearing Blocks Upper - Spherically Seated Block Lower - Solid Block 3. Capping apparatus (i.e., capping material, capping plates, alignment devices, melting pots if sulfur mortar is used).
S2.2.1	The on-site examiner shall verify that the laboratory has written procedures for calibrating or verifying the equipment listed in Table 1, and has adequate written procedures for maintaining its equipment and facilities.
S2.2.2	The on-site examiner shall verify that the laboratory maintains calibration and verification records including data addressing those items designated by an "X" in Table 1.

Table 1

ASTM C39 Equipment requiring written calibration or verification procedures and records

	Compression Testing Machine	Bearing Blocks	Capping Apparatus	Melting Pots	Two-Inch Cube Mold	Cover Plates
(a) Equipment description or name						
(b) Name of Manufacturer	X					
(c) Model, style, and serial number, or other identification	X	X	X			
	type of loading, indication, capacity					
(d) Equipment variables subject to calibration and verification	X	X	X			
(e) Range of operation and range of calibration and verification	X					
(f) Resolution of the instrument and allowable error tolerances on reading	X					
(g) Calibration or verification schedule (intervals)	12 months	6 months	6 months	annual visual inspection	annual visual inspection	annual visual inspection
(h) Date and results of last calibration or verification and date of the next calibration or verification	X	X	X	X	X	X
(i) Name of laboratory person or outside service providing the above calibration or verification	X	X	X	X	X	X
(j) Traceability to NBS or other authority	X					

S2.3 The on-site examiner shall verify that the laboratory has a written test plan containing items a - d and, if a subcontrator performs part of this test, item e of Section S2.3.

S2.4 Not applicable. The laboratory shall maintain strict conformance with the provision of ASTM C39.

S3.1.1 The on-site examiner shall verify that a laboratory retains copies of its test reports containing items a - k except item i of S3.1.1.

S3.1.2 The on-site examiner shall verify that the laboratory retains copies of the data generated during testing which is not included in its test reports (i.e., raw data sheet for recording compression test results).

S3.1.3 The on-site examiner shall verify that the laboratory has specimen control records for samples taken in the field that indicate that these samples are properly handled, stored, shipped, and disposed.

S3.2 The on-site examiner shall verify that the laboratory maintains an inventory of the latest published versions of the following standards:

ASTM C39 - Compressive Strength of Cylindrical Concrete Specimens

ASTM E4-72 - Verification of Testing Machine

ASTM C31 - Making and Curing Concrete Test Specimens in the Field

ASTM C192 - Making and Curing Concrete Test Specimens in the Laboratory

ASTM C617 - Capping Cylindrical Concrete Specimens

S3.3 The on-site examiner shall verify that the laboratory has records of any detected testing errors or discrepancies and subsequent actions taken.

S3.4 The on-site examiner shall verify that the laboratory maintains a file of written complaints and disposition thereof.

Exhibit 2C
Attachment 1

Personnel Check Sheet - ASTM C39-72

Laboratory Staff Member _____

In fulfillment of Section S1.2.1, the supervisor or his/her designee shall observe the performance of each staff member being qualified to perform this test method and shall record that performance by checking off, as a minimum, those items which follow. The performance check is recorded on this check sheet and filed in the employee personnel file in fulfillment of Section S1.2.2.

	Satisfactorily Completed
1. Ensuring that the test is performed as soon as practicable after removal of the test specimen from moist storage.	_____
2. Ensuring that the ends of the specimens that are not plane within 0.002 in (0.050 mm) be capped in accordance with ASTM C617.	_____
3. Ensuring that the upper and lower bearing surfaces are cleaned.	_____
4. Ensuring that the axis of the cylnder is aligned with the center of the spherical block.	_____
5. Ensuring that the spherical block is rotated as it contacts the cylinder.	_____
6. Ensuring that the load is applied continuously and without shock at the specified rate* (Mechanical 1.3 mm/min. (0.05 in/min.), Hydraulic 0.14 to 0.34 MPa/s) (20 to 50 psi))	_____
7. Recording the maximum load carried by the specimen during the test.	_____
8. Calculating the compressive strength of the specimen.	_____

* During the application of the first half of the anticipated load a higher rate of loading will be permitted. Make no adjustments in the controls of the testing machine while a specimen is yielding rapidly immediately before failure.

Supervisor _____ Date _____

Exhibit 2C
Attachment 2

Example Closed Book Examination

A closed book test similar to this example or an acceptable equivalent must be given to each staff member being qualified. Answers are to be recorded on this check sheet and placed in the employee's personnel file in fulfillment of S1.2.2.

These are typical questions These would be expected	Satisfactorily Completed
1. In what conditions should the cylinders be tested? ANS. _____	_____
2. What is the maximum allowance that the ends of the samples may depart from the perpendicular axis? ANS. _____	_____
3. What is the maximum amount that the bearing faces may depart from a plane surface? ANS. _____ _____	_____
4. How many measurements of the cylinder diameter are required to obtain an average? ANS. _____ _____	_____
5. To what tolerance should the diameter be measured? ANS. _____	_____
6. What is the required loading rate? ANS. _____ _____	_____

Supervisor _____ Date _____

Appendix 3 Carpet LAP (NVLAP-03)

Operational Information

Section 3A - List of methods, performance guidelines and proficiency testing requirements.

The test methods for carpets are shown in Exhibit 3A. The tests are the latest versions applicable and identified by a NVLAP Code Number, a recognized test method number, and a short title. The performance guidelines are given in the column titled, "Desired Precision." The capability of a laboratory to perform within the guidelines will be assessed from the written information it submits and from the findings of an on-site inspection. The ability of a laboratory to apply this capability is determined from the results of proficiency testing.

Test methods which require proficiency testing are identified in the column titled, "Test Frequency (Times per Year)." Samples for these tests will be distributed at the frequency shown. It is anticipated that the distribution of samples and analysis of resulting data will be handled through a Collaborative Reference Program for Carpets cosponsored by Collaborative Testing Services, Inc. and the National Bureau of Standards.

The performance guidelines precision statement is expressed in terms of repeatability(R), which is a measure of the ability of a laboratory to repeat its own test result on the same or essentially identical samples. The limits specified in Exhibit 3A for precision are for "good" performance. Approximately 95% of the laboratories should be able to achieve this. Limits approximately 50% wider are used to define "acceptable" performance for accreditation purposes. The limits presented in this exhibit are for laboratory accreditation purposes only and should not be interpreted as setting specification limits on products. Values for precision are listed in Exhibit 3A for some test methods even though a proficiency test is not required for those tests. This information is given as a guide to the laboratory for assessing its own testing capability in lieu of a proficiency sample. This also represents the level of capability expected by NVLAP of the laboratories performing those tests.

The column labeled "Complexity" showing the letter B followed by the subscript 1, 2 or 3 indicates the complexity of the test method for examination purposes. These are used to determine examination costs and are explained in a separate Federal Register Notice describing accreditation fees.

Exhibit 3A

CARPET LAP TEST METHODS
AND PROFICIENCY TESTING REQUIREMENTS

NVLAP Code Test Method No.	Complexity	Short Title	Desired Precision	Test Frequency (Times per Year)
03/D01 ASTM D418-79 as modified by UM 44C	B_1	Methods of testing woven and tufted pile floor covering	R = ±7%	2
03/S01 ASTM D1335-76	B_1	Tuft bind of pile floor coverings	R = ±7%	2
03/S02 Federal Test Method Std. 191 5100	B_1	Textile test method-Breaking Strength	R = ±7%	
03/S03 Federal Test Method 5950	B_1	Textile test method - Delamination	R = ±7%	2
03/S04 DD-C-95-72 Sect. 4.5.1.4	B_1	Carpets and rugs, wool, nylon, acrylic, modacrylic, polyester, polypropylene - Shrinkage	R = ±1-2% of test requirement	
03/S05 AATCC 16E-78	B_3	Colorfastness to light	R=± 1/2 step	2
03/F01 ASTM E84-78	B_3	Surface flammability of carpets and rugs	Flame spread Classification: R = ±20%	
03/F02 UL 992-76	B_3	Surface flammability of carpets and rugs	R = ±7%	

Section 3B - Example of "supplemental information" for one test method.

For each test method included in the NVLAP program, a document entitled "Supplemental Information for the Requirements of the Specific Criteria for Test Method: _____" has been prepared. This document relates the requirements of the criteria to each of the test methods, specifically stating how the criteria will apply. It also describes how evaluators will assess compliance to the criteria for the test method to which it applies.

A copy of the "supplemental information" for each test method for which accreditation is sought will be sent to the laboratory upon receipt of its application. The "supplemental information" will address each section of the specific criteria. Personnel check sheets and other documentations will be provided if appropriate for the test method. Any requirements of the criteria which do not apply to the test method will be stated. The "supplemental information" will not extend the criteria into new areas but will qualify and define the criteria for the particular test method.

Exhibit 3B presents an example of the "supplemental information" for ASTM Test Method D1335-67 (Reapproved 1972). The "supplemental information" will be updated to comply with revision in test methods and the final criteria when published.

Exhibit 3B

SUPPLEMENTAL INFORMATION FOR THE
REQUIREMENTS OF THE SPECIFIC CRITERIA FOR TEST METHOD:

ANSI/ASTM D1335-67 (Reapproved 1972)

"Standard Test Method for Tuft Bind of Pile Floor Coverings"

Introduction

This supplement for test method ASTM D1335 is intended to indicate how each applicable section of the specific criteria is to be interpreted and implemented.

Specific Criteria Section	Supplemental Information Corresponding to the Appropriate Sections of the Specific Criteria
S1.1	The laboratory's qualifying program must have provisions for observing the performance of each staff member authorized to conduct ASTM D1335. (See Personnel Check Sheet, Attachment 1.) An on-site examiner shall verify that the laboratory has such provisions.
S1.2	The laboratory shall have, as a minimum, a documented on-the-job training program for new or untrained persons responsible for this test method. The program shall be designed to insure that the assigned personnel understand 1. The task to which they are assigned. 2. The operation of the equipment required to perform their assigned function, including: a. Adjustment of tensile testing machine b. Mounting of specimen c. Application of clamp or hook d. Judging when the tuft or loop has failed to hold 3. The supervisor shall have an understanding of the requirements of any other standard methods which form a part of or are needed to perform the test.
S1.3	The on-site examiner shall verify that the laboratory maintains a file containing all items (a-c) required by section S1.3.
S2.1	The on-site examiner shall verify that the laboratory has a list and, as appropriate, a description of its facilities and equipment. In addition, the on-site examiner shall verify that the following equipment complies with the provisions of D1335. 1. Tensile Testing Machine (capacity, type or loading, and indicating system). 2. Cut Away Specimen Holder 3. Tuft Clamp 4. Loop Hook 5. Scale or Balance 6. Requisite chemicals of grade and concentration as specified in D1335
S2.2.1	The on-site examiner shall verify that the laboratory has written procedures for calibrating or verifying the equipment listed in Table 1 and has adequate written procedures for maintaining its equipment and facilities.

S2.2.2 The on-site examiner shall verify that the laboratory maintains calibration and verification records including data addressing those items designated by an "X" in Table 1.

Table 1

ASTM D1335-67 (Reapproved 1972) Equipment requiring written calibration or verification procedures and records

		Tensile Testing Machine	Scale or Balance
(a)	Equipment description or name	X	X
(b)	Name of manufacturer	X type of loading, indication, capacity	X
(c)	Model, style, and serial number, or other identification	X	X
(d)	Equipment variables subject to calibration and verification	X	X
(e)	Range of operation and range of calibration and verification	X	X
(f)	Resolution of the instrument and allowable error tolerances on reading	X	X
(g)	Calibration and verification schedule (intervals)	12 months	12 months
(h)	Date and result of last calibration or verification and date of the next calibration or verification	X	X
(i)	Name of laboratory person or outside service providing the above calibration or verification	X	X
(j)	Traceability to NBS or other authority	X	X

S2.3 The on-site examiner shall verify that the laboratory has a written test plan containing items a - d of Section S2.3. Subcontracting any part of this test is permitted to NVLAP accredited laboratories only.

S2.4 On-site examiner shall verify that no degradation of test results occurs due to equipment, facilities, or procedures not in strict conformance with ASTM D1335.

S3.1.1 The on-site examiner shall verify that the laboratory retains copies of its ASTM D1335 test reports containing items a - k of S3.1.1.

S3.1.2 The on-site examiner shall verify that the laboratory retains copies of the data generated during testing which is not included in its ASTM D1335 test reports (i.e., raw data sheet for recording test results).

S3.1.3 The on-site examiner shall verify that the laboratory has control records documenting the receipt, handling, storage, shipping and testing of ASTM D1335 test specimens.

S3.2 The on-site examiner shall verify that the laboratory maintains an inventory of the latest published versions of the following standards:

ASTM D1335 - Standard Test Method for Tuft Bind of Pile Floor Coverings

ASTM D1776 - Recommended Practice for Conditioning Textiles and Textile Products for Testing

ASTM D76 - Specification for Tensile Testing Machines for Textiles

ASTM D418 - Testing Woven and Tufted Pile Floor Coverings

ASTM D123 - Definitions of Terms Relating to Textiles

S3.3 The on-site examiner shall verify that the laboratory has records of any detected testing errors or discrepancies and subsequent actions taken.

S3.4 The on-site examiner shall verify that the laboratory maintains a file of written complaints and disposition thereof.

Exhibit 3B
Attachment 1

Personnel Check Sheet - ASTM D1335

Laboratory Staff Member _____

In fulfillment of Section S1.1, the supervisor or his/her designee shall observe the performance of each staff member being qualified to perform this test method or portions thereof and shall record that performance by checking off, as a minimum, those items which follow. The performance check is recorded on this check sheet and filed in the employee personnel file in fulfillment of Section S1.3(a)

	Satisfactorily Completed
1. Proper specimen conditioning and testing in standard atmosphere for testing textiles.	_____
2. Correct adjustment of tensile testing machine operation rate.	_____
3. Mounting test specimen on holder so specimen tufts are at right angle to long axis of holder and with tufts to be tested in approximate center of cut-away portion of holder.	_____
4. Selection of only one tuft in any row for testing with care taken not to pinch or otherwise deform carpet (cut pile floor covering).	_____
5. Selection of three adjacent loops formed by same end (looped pile floor covering).	_____

Supervisor _____ Date _____

BILLING CODE 3510-13-C

National Voluntary Laboratory Accreditation Program; Proposed Fees To Accredit Laboratories That Test Thermal Insulation Materials, Freshly Mixed Field Concrete, and Carpet

In a separate notice appearing in this issue of the **Federal Register**, the Department of Commerce (Department) announced the issuance of proposed criteria for accrediting testing laboratories which test thermal insulation materials, freshly mixed field concrete, and carpet. Under paragraph (a) of §7.10 of the Procedures for a National Voluntary Laboratory Accreditation Program (NVLAP) (15 CFR Parts 7(a) and 7(b)), notice is hereby given of the estimated fees which the Secretary of Commerce (Secretary) proposes to establish for the three laboratory accreditation programs (LAPs) (i.e., insulation LAP, concrete LAP, and carpet LAP). The proposed schedule of estimated fees is furnished for information and guidance purposes so the public may evaluate the proposed criteria in light of expected fees and charges.

Basis for Fees. The fees proposed are based on the premise that all of the operational costs incurred by the National Bureau of Standards (NBS) in evaluating laboratories seeking accreditation must be recovered from fees to the laboratories. This includes the work-hours, travel, and per diem costs of examiners and evaluators used in the evaluation process. Administrative costs associated with preparing LAPs, establishing criteria, and developing examination procedures are not recovered from laboratory fees at this time but are paid from an appropriated NVLAP budget. The proposed fees are based upon the best estimates which can be made at this time.

A principal goal of NVLAP is to attain a level of efficiency, consistent with high standards of examination required for meaningful laboratory accreditation, so that fees will be as low as reasonably possible. This will be particularly significant in the case of laoratories which apply for accreditation in more than one LAP. In those situations NVLAP expects to reduce the costs of each succeeding LAP by eliminating the need for repetitive examinations for compliance with certain criteria that are common to each LAP. Other costs savings are expected to be made by organizing personnel needed to adequately examine each applicant laboratory so as to minimize their time and travel requirements for each on-site visit. At the same time the visits will be scheduled so that the examiners can proceed to the next laboratory to be examined without loss of productive time.

The fees will vary, depending on the complexity of the test methods and the frequency with which the examiners must visit the laboratories in each of the LAPs. In the insulation LAP for example, laboratory visits occur once a year for the first two years, while for the concrete LAP visits occur only once every two and one-half years. The laboratory visit schedule for the concrete LAP is appropriate because the concrete test methods are likely to change relatively little. The proposed fees also include a contingency factor to cover the costs associated with conducting unannounced visits for up to one-third of the participating laboratories. The purposes of these unannounced visits are to verify the efficiency of the LAPs by randomly selecting laboratories for reexamination and to reexamine those laboratories about which complaints have been received.

Fees for Evaluating a Laboratory. The NVLAP fee model is composed of several components shown in the following equation:

$$F=A+B_1(N_1)+B_2(N_2)+B_3(N_3)+\ldots+C+P$$

Some of these components do not apply for all LAPs. For identification of those components that apply for each LAP, see Table 1, "Applicability of Cost Components by LAP."

Component A. Component A is a fixed charge that covers NVLAP administrative (e.g., travel expenses of on-site examiners) and preliminary technical review and person-hours costs associated with the program operation. The value of the fixed charge A is dependent upon the particular LAP in which the laboratory is involved. For laboratories wishing accreditation for more than one LAP, see the section entitled, "Multiple LAP Enrollment." The values are:

A_1=$750 per year (insulation LAP)
A_2=$500 per year (concrete LAP)
A_3=$350 per year (carpet LAP)

Component B. Component B is a variable charge which covers NVLAP examination and evaluation costs related to each test method for the complete technical review of written information submitted by the laboratory, on-site examination, and the integration of proficiency testing performance results for that test method.

Subscripts 1, 2, and 3 for Component B represent the three levels of complexity into which the test methods fall when considered for examination pruposes. The fee per method for the simpler test methods is represented as B_1. N_1 is the number of such test methods. B_2 is the fee per method for test methods of intermediate complexity and N_2 is the number of such test methods. The most complex test methods and the number of each are represented by B_3 and N_3, respectively. The values are:

B_1=$ 50
B_2=$100
B_3=$150

The level of complexity for each test method in the insulation and carpet LAPs are shown in Exhibit 1A and 3A in the appendices to the **Federal Register** notice referenced in the first sentence of this notice.

Component C. Component C represents the charges associated with laboratory examination performed by examining organizations selected by NBS for that purpose. Usually, this cost will be payable directly to the examining organization by the laboratories being examined. At the present time, the component C charge would be applicable to the concrete LAP only.

The Cement and Concrete Reference Laboratory (CCRL) which is sponsored by the American Society for Testing and Materials (ASTM) is an example of such an examining organization that may be used by NBS. The CCRL has provided a testing labortory inspection service since 1929. CCRL reports its findings directly to the laboratories requesting such inspections. NBS plans to use CCRL services for performing the on-site examination function for the concrete LAP. The CCRL inspection charge will ultimately be determined by ASTM. However, it is estimated that the cost will be $850 per inspection for the"field test method group" and $1,000 per inspection for the"field and laboratory test method group." NVLAP on-site examinations of applicant concrete laboratories will be scheduled as part of the CCRL existing inspection tour. At the present time, the CCRL inspection tour covers all participating laboratories in about two and one-half years. Accordingly, applicant laboratories under the concrete LAP will be examined about every two and one-half years.

Each applicant laboratory which has had a CCRL inspection since March 1, 1978 does not have to be reexamined in order to be accredited under the first round of accreditations for the concrete LAP provided that it:

(1) Submits the latest CCRL inspection report and certifies that any deficiencies noted in the report have been corrected;

(2) Completes an acceptable NVLAP application form and questionnaire;

(3) Submits documentation that it has implemented a within-laboratory program to comply with the proficiency testing requirements described in Appendix 2 of the **Federal Register** notice cited in the first sentence of this notice;

(4) Has an acceptable quality control or laboratory operations control manual available for use by its personnel; and

(5) Pays the compenent a charge of $500 for the concrete LAP.

Component P. Component P represents the charges associated with proficiency testing. These charges cover the cost of samples and their distribution, the analysis of test data supplied by the laboratory, and the reporting of results. Component P charges are applicable only to the insulation and carpet LAP.

When proficiency testing services are provided by an organization selected by NBS to carry out such tests for NVLAP, this cost is payable directly to that organization by the laboratory. The NBS/CTS Collaborative Reference Program is an example of such an organization. Collaborative Testing Services, Inc., (CTS), a non-profit organization that offers proficiency testing services, is responsible for the proficiency testing program for the insulation LAP. The cost for this service is nominally $100 per year for each test method requiring proficiency testing. It is anticipated that CTS will provide proficiency testing services for the carpet LAP; however, the details for these services for the carpet LAP have not been established. Exhibits 1A and 3A in the Appendices of the **Federal Register** notice cited in the first sentence of this notice identify those test methods for which proficiency testing is required.

Multiple LAP Enrollment. When a laboratory wishes accreditation for more than one LAP, the fixed charge component, component A, will be prorated since many of the administrative costs cover the same operation. The total fixed charge will be determined by selecting the largest component A value from the relevant LAPS and adding 20 percent of the remaining component A values for the other LAPs involved.

If a laboratory requests accreditation for a test method which is essentially the same in two different LAPs (e.g., ASTM E 84 in the insulation LAP and carpet LAP) there will be no additional cost for the laboratory to be accredited for the test in the second LAP once it is accredited for that test in the first LAP. The variable charge component, component B, will be applied only once. However, the laboratory must indicate at the time of its application that it wants accreditation for the test method in both LAPs and must be prepared to demonstrate for an on-site examiner the performance of the test for either product. Also, a separate test report for each product must be available (see Criterion S3.1.1 in the **Federal Register** notice cited in the first sentence of this notice). In addition, the laboratory must be prepared to participate in separate proficiency tests if such tests are specified.

Fee Summary. The fee structure distribution is demonstrated by Table 1 for the insulation, concrete, and carpet LAPs. The aplicable cost components are shown by the letter X.

Table 1—*Applicability of Cost Components*

	Components			
	A	B	C	P
Insulation LAP	X	X	.....	X
Concrete LAP	X	.....	X	.....
Carpet LAP	X	X	.....	X

Example Calculations. In order to illustrate the annual fees for accreditation, the following examples are provided:

Example 1: If a laboratory chooses to be accredited under the insulation LAP only for 5 simple test methods (B_1), 7 intermediate test methods (B_2), and 2 complex test methods (B_3), and if proficiency tests are required for 6 of these 14 test methods at a cost of $100 each per year, the annual fee (F) would be:

$$F=A_1+B_1(N_1)+B_2(N_2)+B_3(N_3)+P$$

$$F=\$750+\$50(5)+\$100(7)+$$

$$\$150(2)+\$100(6)=\$2,600$$

Example 2: If a laboratory chooses to be acredited under the concrete LAP for the field and laboratory groups, the annual fee (F) would be:

$$F=A_2+C$$

where C is the pro-rata share of the CCRL inspection costs ($1,000÷2.5=$400).

$$F=\$500+\$400=\$900$$

Example 3: If a laboratory chooses to be accredited under the carpet LAP for 8 test methods (5 simple test methods and 3 complex test methods for carpet), and if proficiency tests are required for 4 of the 8 test methods, at a cost of $100 each per year, the annual fee (F) would be:

$$F=A_3+B_1(N_1)+B_3(N_3)+P$$

$$F=\$350+\$50(5)+\$150(3)+\$400=\$1,450$$

Example 4: If a laboratory chooses to be accredited under the insulation and carpet LAPs for 14 test methods (5 simple carpet test methods, 7 intermediate insulation test methods, one complex insulation test method, and one complex carpet test method), and if proficiency tests were required for 6 of the 14 test methods at a cost of $100 each per year, the annual fee (F) would be:

$$F=A_1+A_3(.20)+B_1(N_1)+B_2(N_2)+B_3(N_3)+P$$

$$F=\$750+\$350(.20)+\$50(5)+$$

$$\$100(7)+\$150(2)+\$600=\$2,670$$

Example 5: If a laboratory chooses to be accredited under all three LAPs (insulation, concrete, and carpet) for 22 test methods (4 simple insulation test methods, 5 simple carpet test methods, 7 intermediate insulation test methods, 2 complex test methods, and all 8 concrete test methods, and if proficiency tests are required for 6 of the 22 test methods at a cost of $100 each per year, the annual fee (F) would be:

$$F=A_1+A_2(.20)+A_3(.20)+B_1(N_1)+B_2(N_2)+B_3$$

$$(N_3)+C+P$$

$$F=\$750+\$500(.20)+\$350(.20)+$$

$$\$50(9)+\$100(7)+\$150(2)+\$400+\$600=\$3,370$$

Inquiries. Any inquiries may be addressed to Dr. Howard I. Forman, Deputy Assistant Secretary for Product Standards, Room 3876, U.S. Department of Commerce, Washington, DC 20230, 202–377–3221.

Dated: September 25, 1979.

Jordan J. Baruch,

Assistant Secretary for Science and Technology.

[FR Doc. 79-30177 Filed 9-27-79; 8:45 am]

BILLING CODE 3510-13-M